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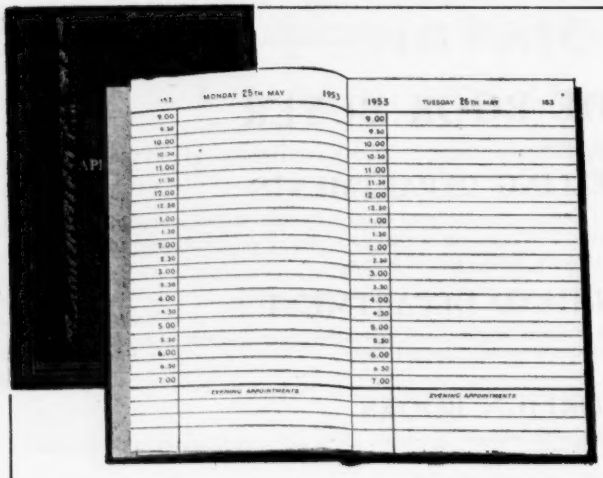

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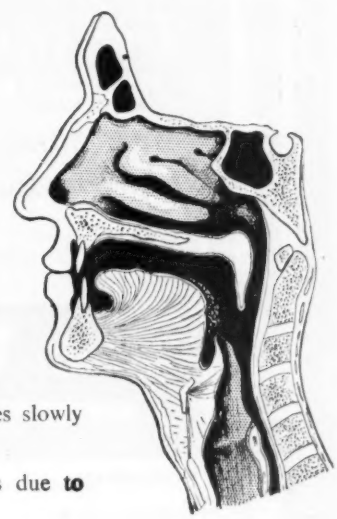

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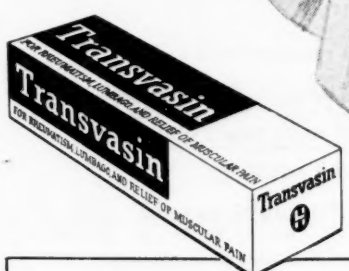

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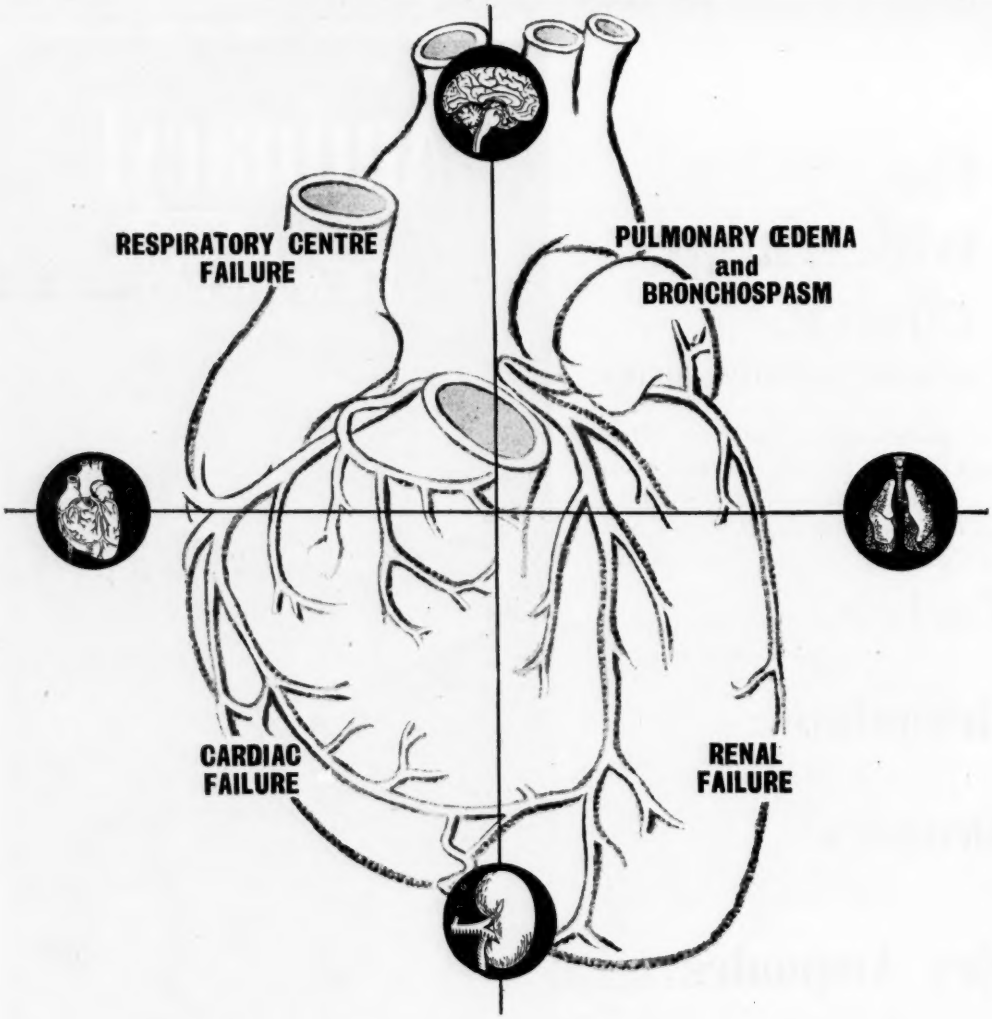

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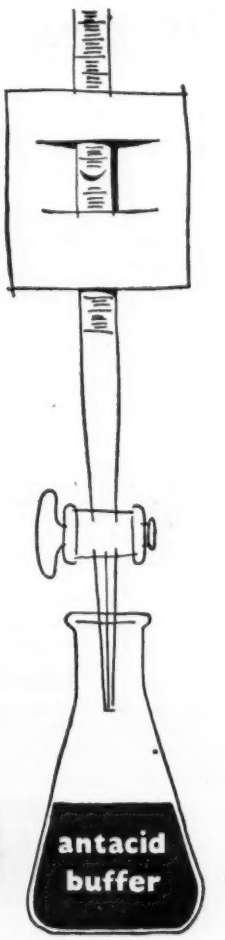

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References

1. The use of *Rauwolfia serpentina* in Hypertensive Patients, *New Engl. J. Med.*, 248 : 48 (Jan. 8), 1953.

2. Preliminary Observations on *Rauwolfia serpentina* in Hypertensive Patients, *Proc. New Engl. Cardiovas. Soc.*, 1951-1952, p. 34.

3. Clinical Trial of *Rauwolfia serpentina* in Essential Hypertension, *Brit. Heart J.*, 2 : 350, 1949.

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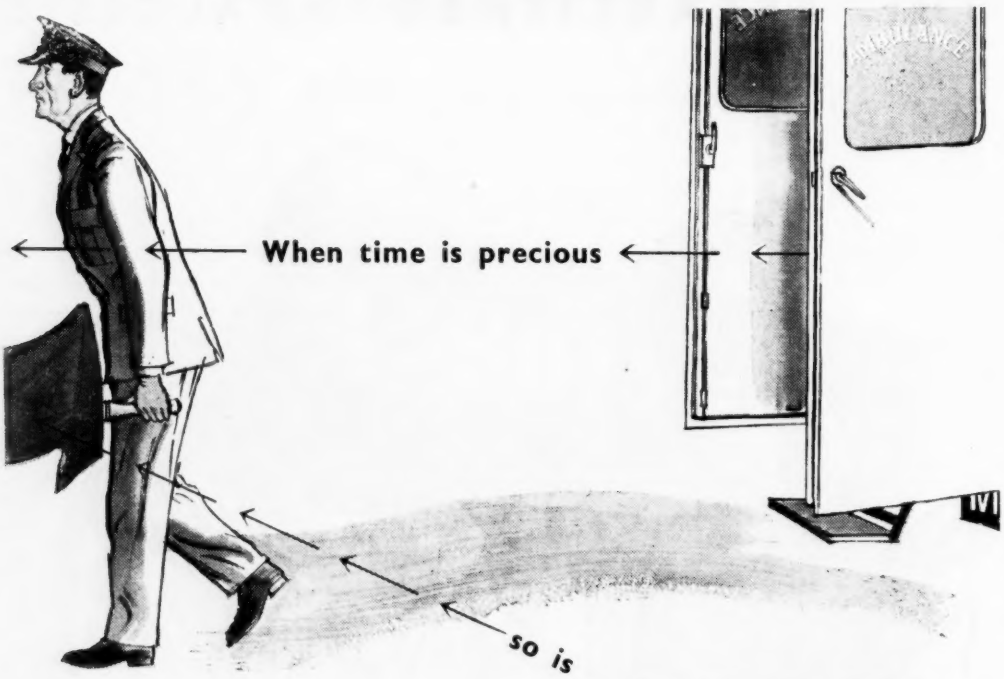

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OBJECTIVE EXAMINATION PAPERS IN THE MEDICAL CURRICULUM

D. C. SINCLAIR
M.A. Oxfd, M.D. St. And.
UNIVERSITY DEMONSTRATOR IN HUMAN ANATOMY, UNIVERSITY OF OXFORD

MOST medical students regard examinations with almost painful concern, and indeed the influence which they wield for good or ill renders them worthy of respect. Examiners, however, often make less effort than they should to think critically about the too-familiar weapons they use, and in Britain medical examinations follow a fairly stereotyped pattern. It is therefore stimulating to observe the "objective-type" examinations of the medical schools of the United States, and to try to assess their value in relation to the more conservative methods so far used by British schools. This article is not concerned with arguments as to whether or not examinations of any type are desirable phenomena; it merely accepts the situation that the vast majority of medical schools throughout the world employ them.

The Traditional Examination Paper

FORMAT

In Britain written papers are usually three hours long, and the student has to answer some five or six questions; he is usually allowed a restricted choice by the inclusion of one more question than he needs to answer. He has thus a considerable time for each of the questions, which are so framed that he has to treat the subject at moderate length. Questions are usually of the "essay" type, introduced by the words "Discuss," "Describe," "Give an account of," "Compare and contrast," and the like, only occasionally varied by "Write short notes on," or, rarely, "Tabulate."

This format imposes fairly narrow specifications on each question: it must be capable of being answered in the time provided, yet must not be too short; it must not be too difficult nor yet too easy; it must be completely unambiguous (the examination hall is full of sea lawyers), and it should be capable of connected and orderly treatment. It is a difficult task to frame a satisfactory question meeting all these requirements which has not, in one form or another, been asked before. Hence the frequency of old favourites, well-tried questions which have already served to distinguish the sheep from the goats.

ASSESSMENT

For all professional examinations in Britain it is usual to have at least two examiners, and this arrangement protects the student against having his future decided on the basis of one opinion only. It can operate in this way only if both examiners read all the scripts, or if some other safeguard is adopted. The assessment of (and sometimes the mere physical act of reading) the average essay type of script is a time-consuming affair, and it is often impracticable for both examiners to read every script. A common compromise is to mark by questions rather than by candidates, each examiner marking half the questions.

Many systems of assessment are in use (Vernon 1940). At first sight it seems only necessary to establish whether the candidate ought to pass or to fail, but the paper rarely forms the whole of the examination, and the assessment of the script has to be made in conjunction with the oral and practical examinations. For this reason a simple pass or fail system is not sufficient, and some sort of scale is necessary so that the result can be given due weight.

The most familiar method is to grade scripts in percentages, drawing an arbitrary line at the pass-level, which is usually 50%. Such scoring is a mere arithmetical convention, a percentage of an abstraction. In medical subjects the examiner cannot sit down with a calculating machine and a list of all the possible points which could be made; he records merely an impression, having constantly in mind the pass mark. Nevertheless, so used are we in our daily life to handle figures which have been derived by legitimate mathematical means that he may be deluded into thinking he is performing an arithmetical operation, instead of using an arithmetical notation to record a fairly gross subjective judgment. Just how much these subjective impressions and the marks which reflect them can vary has been shown by experiment, with rather frightening results.

For example, Hartog et al. (1936) obtained fifteen scripts which had all received the same moderate mark in a School Certificate examination in history, and circulated them to fifteen experienced examiners, each of whom marked the scripts and placed the candidates in the category of "fail," "pass," or "credit." Over twelve months later the same scripts were resubmitted to the same examiners for the same procedure to be gone through. On the first occasion the marks ranged from 21 to 70 out of 96, and on the second from 16 to 71. The difference between the highest and the lowest marks allotted to one of the candidates was 30 marks. In 92 instances the examiners altered their original verdict of "fail," "pass," or "credit" at the second time of examination, and one examiner changed his mind about eight of the fifteen scripts he examined. In another part of the same investigation one candidate in School Certificate English was awarded marks varying from 28 to 80 out of 100 by seven different examiners.

Similar results have been obtained by other workers (Vernon 1940), and though no studies appear to have been made in medical subjects, there seems no reason to suppose that they would constitute an exception.

COMMENT

The essay type of examination is used to discriminate between students perhaps more often than any other educational test. We should therefore ask ourselves what qualities and achievements it evaluates. This is not a simple question to answer, but it is possible to make a rough list.

The essay-type examination tests the ability of the candidate to comprehend simple written instructions at a moment of stress, and, having done so, to apportion his limited time judiciously. It tests his factual recall, and his power to select the most important relevant facts of which he is master. It tests the speed and precision with which he can arrange and set down these facts in logical order, and his capacity to develop with them a reasoned argument or a concise description. It tests his ability to write, spell, and punctuate his own language legibly and fast, his capacity to use and understand the language of science, his neatness and tidiness, and, finally, the ingenuity with which he can conceal his own ignorance.

Now many of these skills are undoubtedly desirable in a doctor, as, indeed, they are in any educated man. "Intelligence" is not listed among them, since the results of essay-type examinations do not correlate well with the scores obtained by candidates in tests which are commonly held to measure intelligence (Edholm and Gibson 1944, Bartlett 1953). It ought, perhaps, to be stressed that factual recall is only one among many achievements tested, and is placed in a wide setting concerned with the use of factual knowledge. The way in which a candidate sets about answering a question is often just as big a factor in his success as the battery of facts he can unmask.

On the other hand, the limited number of essay-type questions it is possible to ask in a single examination means that the sample taken of the student's knowledge will be small, unless the questions themselves are broad and comprehensive. All examinees know that this is not always so, and questions which demand a detailed knowledge of a restricted field lead the student to cram his mind with detail to the detriment of his grasp of the broad outlines of the subject. From this type of question also derives the time-honoured practice of "spotting" questions, so that small sections of the subject are worked over to the exclusion of others because they are "bound to come up again this time."

The testing "in depth" of a limited part of the student's comprehension of the subject thus leads to an undesirable element of luck in the examination, and the student also feels that his future depends on an arbitrary selection of questions. A single paper of six questions thus becomes a formidable psychological obstacle, causing students to work for the examination only, and not to attempt to acquire a grasp of the subject for its own sake. For this reason it is often suggested that a second paper should always be given, to spread the load more evenly. This argument is, however, capable of infinite extension, and the ground covered by two papers, though admittedly twice that covered by one, is still a small fraction of the whole subject.

But the commonest objection to the essay-type paper is the extent to which the candidate is dependent on the examiner's purely subjective judgment. Though discrepancies are smoothed out by compromise between the examiners, and also by the candidate's performance in the oral examination (if given), an uneasy feeling must remain that an educational test where such variability in assessment is possible is not wholly satisfactory.

It is considerations of this kind, allied to the impracticability of marking vast numbers of essay-type scripts in a limited time, that have led to the introduction of the objective examination into medical subjects.

The Objective Examination Paper

HISTORY

The objective examination has a history extending back some forty years, and is now a commonplace in American education up to, and often including, the college level. In this country its influence has not yet extended much beyond the "eleven-plus" examinations. The idea is that more of a subject can be covered by asking a large number of short questions rather than a few long ones, and that the questions can be put in a form that leaves marking independent of the examiner's subjective judgment. It has been possible to eliminate altogether the human element in the marking process since 1937, when the International Business Machines Corporation developed a machine which would mark test papers electrically. This has led to the widespread use of objective tests for many purposes throughout the United States, and some American universities now have a special objective examination service, which administers all university examinations.

The introduction of this type of test to the medical curriculum is relatively recent, but in 1950–51 the National Board of Medical Examiners in the United States successfully converted their examinations in pharmacology and internal medicine to the objective format. As a result, the Board is adopting similar measures for all the examinations under its control. This step is being taken with the assistance of the Educational Testing Service, an organisation which specialises in the design, handling, and assessment of many similar tests, ranging from the United States Military Academy entrance examinations to the Medical Colleges Admission Test, which is now insisted upon by the majority of American medical schools (Stalnaker 1950). Such a move by the National Board, which is the only examining body recognised by virtually all the States in the Union, is bound to have a great influence on the type of internal examinations set in individual medical schools.

MULTIPLE-CHOICE EXAMINATION

The National Board of Medical Examiners (1953) publish a small booklet which gives examples of the kind of question the student may expect. They are all of the multiple-choice type, in which the student is presented with a question and five possible answers, his duty being merely to indicate his choice of the best of these answers. There are usually 200–300 of these questions to be answered in an examination lasting three hours, but the exact number varies with the subject. The student indicates his choice by blackening a labelled space in a special answer sheet with a soft pencil; no writing is involved.

The questions are usually arranged in groups, each group falling under a specific set of instructions. It is not practicable to give examples of all types of question, but a few of the possibilities may suffice to indicate the scope of the method as applied to medical subjects; they are all taken from the National Board's booklet.

The simplest type is as follows:

Directions.—Each of the following questions or incomplete statements is followed by five suggested answers or completions. Select the one which is best in each case and blacken the corresponding space on the answer sheet.

Q. In airborne first-infection tuberculosis the primary focus is most commonly found in the

(A) periphery of the lung
(B) tonsil
(C) apex of the lung
(D) tracheobronchial lymph-nodes
(E) hilus of the lung

There are many variants of this:

Directions.—Each group of questions below consists of five lettered headings followed by a list of numbered words or phrases. For each numbered word or phrase select the one heading which is most closely related to it and blacken the corresponding space on the answer sheet.

(A) Quinidine
(B) Theophylline
(C) Amyl nitrite
(D) Glyceryl trinitrate
(E) Papaverine

Q. Increases the contractile force of the heart and is diuretic.

Another type of question requires quantitative information:

Directions.—The following paired statements describe two entities which are to be compared in a quantitative sense. On the answer sheet blacken the space under

A if (A) is *greater than* (B)
B if (B) is *greater than* (A)
C if the two are *equal or very nearly equal.*

Q. (A) The amount of glycogen in the cells of Henle's loop in a diabetic.
(B) The amount of glycogen in the cells of Henle's loop in a non-diabetic.

The directions may be quite complicated:

Directions.—Each of the following pairs of phrases describes conditions or quantities which may or may not be related. On the answer sheet blacken the space under

A if increase in the first is accompanied by increase in the second or if decrease in the first is accompanied by decrease in the second;

B if increase in the first is accompanied by decrease in the second or if decrease in the first is accompanied by increase in the second;

C if the second remains constant, or approximately constant, when the first increases or decreases.

Q. 1. Cerebrospinal fluid pressure. 2. Intra-ocular pressure.

In the preceding group of questions only three possibilities are presented to the candidate, but in another similar group there are five:

Directions.—Each of the following sentences consists of two main parts; a statement and a reason for that statement. On the answer sheet blacken the space under

A if the statement and the proposed reason are *both true* and are *related* as cause and effect;

B if the statement and the proposed reason are *both true* but are *not related* as cause and effect;

C if the statement is *true* but the proposed reason is *false*;

D if the statement is *false* but the proposed reason is *an accepted fact or principle*;

E if the statement and the proposed reason are *both false*.

Q. The corpus luteum of menstruation becomes the corpus luteum of pregnancy because progesterone inhibits the activity of the anterior portion of the pituitary gland.

Another group of questions consists of several case-histories, each followed by a series of questions, each with five possible answers; these questions deal with such matters as the most likely diagnosis, the most likely additional physical finding, the probable outcome of the disease if left untreated, and so on.

Setting the questions is a laborious task, for on their exact form a great deal depends. The procedure in setting the National Board examinations is outlined by the Educational Testing Service in their booklet *Building a Test* (1953). The questions in a particular subject are decided at a meeting of the examiners and cast into a suitable form with the help of a member of the testing service. After checking, the questions are experimentally administered to a group of students, usually by including them as unscored items in another test on the same subject. The answer sheets relating to these items are then subjected to a process known as "item analysis," which shows how many students selected the "keyed" or correct answer, and how many selected each of the "decoys." A good question is one which good students (as evaluated by their score on the whole test) will answer correctly more often than mediocre or poor students, and it is possible to give mathematical expression to the capacity of the question to discriminate between good and bad students.

The results of item analysis often lead to recasting of the question. For example, if it is found that good students tend to prefer one of the "decoys" instead of the "keyed" answer, the wording is immediately suspect. Indeed, the wording is often extremely important. If one of the decoys is several words longer than the others, this in itself will attract more preferences from poor students. Two of the decoys may overlap, so that if one were correct the other would have to be also, or, conversely, they may be self-exclusive, so that if one is correct, one or more of the others cannot be. Pure logic may thus lead a candidate to the correct answer (Vernon 1940, Davis 1950).

The questions on trial are also rated for difficulty, the aim being to provide in the final assembly of questions a range from items that are easy to those which are extremely difficult, so that the average student will answer slightly more than half the items correctly. (In this type of examination the pass mark is just as arbitrary as in essay questions; the students are ranked in order of their prowess in the examination, and a subjective decision has then to be taken as to where the failure-line must be drawn.) The speed with which the questions can be answered is also taken into account, and adjustments are made so that 80–90% of an average class have time to attempt all the questions in the final assembly. When the test is put together it is again checked, and given to another batch of students for final trial.

All questions are regularly reviewed by the committee of examiners, and so kept up to date in the light of increasing knowledge. Medical questions are perhaps particularly difficult to frame, for, as the National Board of Medical Examiners point out:

"... in the broad field of medicine contrast may not be sharply defined as between black and white, but rather varying shades of grey. In answering these questions, therefore, one should look for the best choice, and not be misled by other choices which might be considered possible, but still less applicable than the one considered correct. In each case the test committee has agreed that there is only one best answer ..."

It is often hard to find a sufficient number of decoys which will really decoy. If one or more of them is too obviously unacceptable, the choice is no longer between five answers, but between a smaller number, with a correspondingly greater random chance of hitting the correct one.

The process of setting an objective-type examination containing perhaps 200 questions is thus not to be undertaken lightly, and expert advice is not available in every medical school. Many amateurs may find hard-wrought questions ruined by the curse of unsuspected ambiguity which sits on the shoulders of everyone who has put inquisitorial pen to paper. Nevertheless, these examiners reap their reward when the time comes for assessing the answer sheet.

Under the objective system the booklet containing the questions is handed in again at the end of the examination, and can be used a second time at some future date. It is possible in this way to accumulate a stock of questions of such magnitude that after the initial labour the examiner will never need to set any more, but will simply draw a fresh combination of questions from his stock. His duties as an examiner would then reduce to servicing his questions and assessing the results, which, if a machine is available, is almost an automatic process. The general opinion is that a stock of some 5000 questions in a given subject would ensure an examiner a life of ease and comfort, but the student fraternities are attempting to circumvent such proposals by industriously setting their members the duty of memorising two or three questions each and writing them down after the examination for future study. Most examiners, however, feel that it is more difficult for a student to memorise the answers to 5000 questions than it is for him to learn the subject.

ASSESSMENT OF MULTIPLE-CHOICE EXAMINATIONS

If the tests are hand-scored, the rate of correction may be up to 50 answer-sheets an hour. If electrical marking is used, the answer-sheet is inserted in a special machine in which a large number of electrical contacts are masked by a master stencil with holes cut in it corresponding to the position of the correct answers in the test being marked. The pencil marks allow a current to flow through the contacts, and the machine counts the number of correct and incorrect answers by measuring the amount of current flowing. The score may be read off directly from a meter, and the machine will also register percentages, part-scores, right answers minus wrong answers (or any desired fraction of wrong answers) and so on at will. The operator has thus merely to insert the sheets and write down the scores, so that it is possible to score 700–800 tests an hour. I understand that a further development of the machine is proposed in which the mark obtained will automatically be printed on the answer-sheet. It is a sad commentary on human frailty that it is often necessary to go over the answer-sheets before scoring to ensure that the pencil marks are adequately black.

Machines enable an immense amount of data to be analysed quickly, and since the scoring is truly arithmetical, statistical comparisons are valid. It is possible to compare directly the performance of two groups of students, or the performance of the same group on different sections of the test. Thus, if the students of a particular medical school equal or surpass the mean performance of those in all other medical schools in every subject but one, it is pertinent for the school to inquire into the teaching of that subject. It is also interesting

that on at least one occasion an analysis of the machine-marked results has revealed a leakage of information about the content of the examination (Cowles 1953).

OTHER TYPES OF OBJECTIVE QUESTION

Though the multiple-choice question is generally regarded as the most useful and reliable, many other objective questions are in use.

(*a*) *True or false.*—This is the simplest form of multiple choice, and has similar advantages and defects, but the element of chance is greater. An example from a recent histology paper reads :

Directions.—Encircle the appropriate letter to indicate each statement as either true or false.

Q. T F Blood vascular channels are present within lymph-nodes.

(*b*) *Matching.*—The candidate has to match a set of items with their attributes. This is sometimes done in tabular form—e.g.,

Directions.—Indicate which of the cells or tissue-elements listed below are normal components of the organs which head each of the following columns. Place an X mark in the appropriate square.

(There follows a list of ten tissue-elements ranged down one side of a square along the top of which are arranged ten organs.)

(*c*) *One-word and "fill-in."*—These have to be answered by one word or one phrase only—e.g.,

Q. In what organ is the sequence : arteriole–capillary–sinusoid–venule found ?

Fill-in questions may leave several blank spaces in a sentence :

Q. The presence of.....and.....tissue in the tunica.....of arteries enables them to accommodate fluctuations in blood-pressure and volume, while the presence of .....in the tunica.....prevents over-distension.

(*d*) *Various.*—Considerable enterprise is being used in framing new variants of the objective pattern. Duplicated diagrams or drawings are left with the leaders unlabelled, and the student has to fill them in ; he may have to complete tables showing the contrast between two diseases or drugs, to recognise structural chemical formulæ, to give a one-word diagnosis or a one-word treatment on the basis of brief case-histories, and so on. The department of psychiatry at Johns Hopkins use a test in which eight brief biographical sketches are separated into two parts : (1) the later career ; and (2) the early life and family background. The student has to fit them together.

COMMENT

The objective paper clearly allows a more extensive sample to be taken of the student's knowledge, though the sample in different areas may penetrate to varying depths beneath the surface. In comparison with the essay-type examination, the skills tested are not so numerous. Chief among them are the ability to comprehend written instructions and the power of discrimination; the ability to reason from cause to effect is also tested in certain questions. Almost of necessity, the questions aim at the uncovering of factual knowledge, but the power of factual recall is not so heavily drawn upon as in the essay question. In multiple-choice questions, the student has at least the advantage of knowing that the fact he is required to remember is in front of his nose, if he can but chip it out from its matrix of irrelevancies. The element of guesswork is constantly present (Ruch 1929), and the student who answers completely at random will score marks through ignorance. (For this reason it is common to weight the marks in such a way that wrong answers are taken into account as well as right ones.) There is no opportunity for originality in the answer, and the student cannot be asked his views on any debatable point. The candidate's powers of self-expression and his ability to expound a logical argument or a methodical description are not tested, nor is his skill in spelling and writing his own language grammatically.

The form of the multiple-choice question is similar to the form of certain questions asked in intelligence tests, and it might be expected that "intelligence" would be considerably involved in objective examinations of this sort, though direct evidence of this for medical students does not seem to be available.

Subjectivity has by no means been eliminated from objective-type examinations ; it has merely been transferred from the marking of the questions to the setting of the questions. Individual examiners may set questions of widely differing standard, and have their own views on the best answer. Thus Pullias (1937) found a relatively low correlation between the marks of the same students in objective examinations designed to cover the same subject but set by different examiners. This objection is, however, largely met by having the questions agreed by a large committee of examiners.

Again, the determination of success or failure is still an arbitrary decision. The failure-level must be determined after the marks are known and not before, and is thus related to the mean performance of the whole class and not to any absolute value. This is known as "grading on the curve," and in effect converts the examination into a competitive one.

Cowles and Hubbard (1952) obtained evidence in favour of the multiple-choice examination during the trial change-over of the National Board of Medical Examiners' examinations in pharmacology and internal medicine. In each subject, two hours were given to essay-type questions and one and a half hours to multiple-choice questions. The medical schools furnished confidential reports stating which students in their opinion were in the top 20% of the class and which were in the bottom 20%. It was found that in both subjects the correlation of objective-test scores and medical-school ratings was significantly higher than the correlation of essay scores and school ratings, and Cowles and Hubbard consider that :

> "(1) the objective examination, when carefully and diligently prepared, appears to offer more reliable and valid evaluation of the student's knowledge and his ability to apply that knowledge to the situation in hand than can be obtained from the time-honoured essay examination ; (2) the objective examination lends itself to thorough statistical analysis so that it may be accurately and intensively assessed, leading to recurrent revisions permitting steady improvement of these examinations."

Nevertheless, many people, both in the United States and elsewhere, watch the advance of the objective examination with concern, because they feel that such examinations test only a limited number of the qualities which are needed by a doctor. Already in some American medical schools there are students who have never been exposed to any other form of examination throughout their whole educational career. It is felt that such students should at least have the opportunity of expressing their opinions on paper. Many schools, therefore, while including multiple-choice questions in their internal examinations, continue to ask other types of question as well. In some instances these are full-blown essay questions of the traditional type, but in others an attempt has been made to avoid some of the drawbacks of the essay question, usually by means of short-answer questions.

Short-answer Questions

Here a restricted space is provided for the student's views, and he has to achieve a compression of his ideas, which must therefore be stripped of the unnecessary verbiage so common in essay-type answers (Dobbie 1938, Barnes 1950). The key-words in such questions are "Define," "Outline," "Name," and so on—e.g.,

Q. Define adequately in one well constructed sentence, any *four* of the following: (limit 1½ pages)

1. sarcoplasm
2. reticulum
3. serosa
4. parenchyma
5. arteriole

Q. Outline under well-planned headings and subheadings (total of 20–25) a discussion of "The human skin and its derivatives."

Such questions test the student's grasp of essentials, and impose little strain on the examiner; they may, in fact, be termed "semi-objective."

General Discussion

All medical examinations basically seek to establish whether the student has a command of the subject adequate for him to be considered fit to undertake the practice of medicine, either immediately or at a later date (Roberts 1946). It is in this sense of an achievement test that examinations are usually regarded. Yet they have a value as a teaching medium for students, if the paper is discussed with the class after it is over, and some schools give out model answers for this purpose. They can also teach those teachers who take the trouble to find out from the results which parts of the subject have not penetrated their students' understanding (Vernon 1940).

The essay-type examination is still the standard instrument for distinguishing between good and bad students. Such papers are the means by which success or failure are often determined, scholarships won, and honours awarded. They have, on the whole, worked equitably in the past, and may continue to do so in the future. Yet some people have the knack of answering essay questions, and others, though equally capable students, have not. Some schools have tried allowing the student to bring into the examination room any books he wishes; this does not result in a significant improvement of the standard, and occasionally upsets the students. At least two American departments, proceeding on the theory that a student ought to know best what he knows, have tried allowing each student to set himself a question and then answer it; the results were catastrophic and the experiments were not repeated.

There is, in fact, a definite technique of answering essay-type questions, a technique which comes naturally to some people but has to be painfully acquired by others, who may fail simply through lack of experience in it. Nobody would pretend that justice is always done, and any modification of format or procedure which may result in fewer injustices is worth consideration. Examinations are not the only means by which the worth of a student may be assessed, and it is highly desirable that we should have a clear idea of what we are doing when we set and mark a written paper. It is one of the benefits of the introduction of the objective examination into medical affairs that it will force us to think again about the form in which our own papers are set.

At present we must regard the medical objective examination as something which has still to prove its worth, despite the interesting studies which are being undertaken on its relation to student proficiency. But there is little doubt in my mind that a generation of doctors brought up on objective examinations will be different from the generation brought up on essay-type questions, for the form of the examination not only tests the student, but also colours the way he works (Vernon 1940). Whether they will be better or worse doctors is a question nobody is likely to be able to answer for at least many years to come, and one is tempted to say that psychology is gaining a measure of control over medical education through the weapon of achievement tests much in advance of its ability to evaluate the changes which it is introducing. Nevertheless, these changes are of the greatest interest, and deserve the closest consideration from every medical examiner. As Vernon (1940) points out, neither type of examination can be considered satisfactory by an impartial observer, but their faults to a certain extent cancel out. It is perhaps to a combination of objective and essay questions in the same paper that we must look for future advances in the science of examining.

I made these observations during a trip to the United States under the auspices of the Rockefeller Foundation, whose help I gratefully acknowledge. I should also like to thank the National Board of Medical Examiners for permission to quote from their examination questions, the department of anatomy at the University of Rochester for the use of some of their questions, and Dr. John T. Cowles of the Educational Testing Service for his invaluable and patient assistance.

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RESUSCITATION OF THE NEWBORN WITH INTRAGASTRIC OXYGEN

(AKERREN'S METHOD)

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IN contrast with the general decrease in infant mortality during the past fifty years the stillbirth-rate and the neonatal death-rate have remained obstinately resistant to improvement. Thus Smith (1951a) has reported that of every 10,000 births in the U.S.A. some 150 lives are lost in stillbirth and a further 150 infants fail to climb out of what he has called "the Valley of the Shadow of Birth." In this country deaths in the first day of life still account for 38% of those occurring in the first month of life (the neonatal period).

One important cause of these deaths is asphyxia neonatorum. Moreover, of those who survive this dangerous complication not all escape damage to the central nervous system.

The establishment of respiration in the asphyxiated newborn infant is as much a problem today as ever. Whatever primarily causes depression of the respiratory centres and prevents them from acting, the delay or insufficiency of respiration itself deepens the anoxia, with still further depression of the respiratory centres. The primary purpose of treatment is to prevent this additional secondary anoxia. Of the many different methods advocated and practised to combat asphyxia neonatorum no single one has received universal approval. Methods once popular have fallen into disfavour, and others have been abandoned because they were found harmful. The

present tendency is toward gentle rather than vigorous stimulation ; but, on the other hand, the apparatus and procedure devised for producing this stimulation have tended to become increasingly complex. What is much needed is a method which is simple, safe, and effective, and ideally could be used in home confinements.

One with claims to fulfil these criteria was reported by Akerren and Fürstenberg (1950), who described the resuscitation of asphyxiated newborn infants by passing oxygen into the stomach. Ylppö (1935) had already shown that in premature infants oxygen in the alimentary tract is absorbed directly into the blood-stream from the capillaries of the intestinal mucosa.

We have been unable to find any account of the use of this method since the publication of Akerren's original article. In this paper its use in 48 infants is reported.

Method

It is the nurses in the labour ward who are confronted with the asphyxiated baby, and we have found it perfectly safe to entrust them with the decision to use Akerren's method. Time is thus saved, and time is the important factor. Normally, when the head is born, the inside of the mouth is wiped carefully with a square of soft linen, and mucus is aspirated from the pharynx with a mucus extractor. As soon as the infant is born, the cord is tied and cut, and the infant is placed in a warm cot with a small pillow humped into the loins and with the head slightly lower than the feet ; aspiration of mucus is then repeated if necessary. By this time most infants will be breathing well. If respiration is delayed, the tongue is firmly gripped with small pointed tongue forceps at least $^1/_2$ in. from its tip, and gentle traction is applied. If despite this the infant does not breathe or gives no more than an occasional gasp, and especially when the heart beat by becoming slower and feebler indicates that the infant's condition is deteriorating, then Akerren's method of resuscitation is applied. If the infant is born white and shocked and shows no sign of immediate improvement, the method is used without delay. It has taken the place of stimulants such as nikethamide and lobeline.

In each labour ward is kept an autoclaved box containing four Jacques catheters, a pair each of sizes 5 and 3 ; one catheter of each pair serves as the inlet and has a glass connection for attachment to the pressure tubing of an oxygen cylinder. The second of each pair serves as a safety or outlet catheter. The pair appropriate for the size of the infant is chosen, and the safety catheter is passed first. The stomach contents are aspirated, the nurses being satisfied that the response is better when this is done. The upper end of this catheter is then placed under water in a small gallipot. The inlet tube with the oxygen running through it is passed, and within a few moments the stream of bubbles in the gallipot shows that oxygen is entering and safely leaving the stomach. The catheters are left in situ until spontaneous breathing is well established. The abdomen is watched ; and, as the oxygen enters, the stomach and sometimes the intestines may be seen to bulge. With the oxygen running at 1 litre a minute, the abdomen was not unduly distended in any of the children in our series.

First Trial

The first occasion when we used this method seems to us to merit a special description. In 1949 Dr. Akerren visited our hospital, and, just before leaving, mentioned his method modestly, indeed almost casually, to one of us (H. K. W.). No trial was made of it for many months. The notion of inflating the stomach of a severely shocked baby was startling. Responsibility for making the first experiment could hardly be delegated to a resident, certainly not to a nurse, and the likelihood of being in the hospital at just the right moment for trying it was remote. The project seemed impracticable as well as involving risk. It was allowed to pass out of mind.

" The mind," wrote Wilfred Trotter (1941), " likes a strange idea as little as the body likes a strange protein, and resists it with a similar energy. It would perhaps not be too fanciful to say that a new idea is the most quickly acting antigen known to Science."

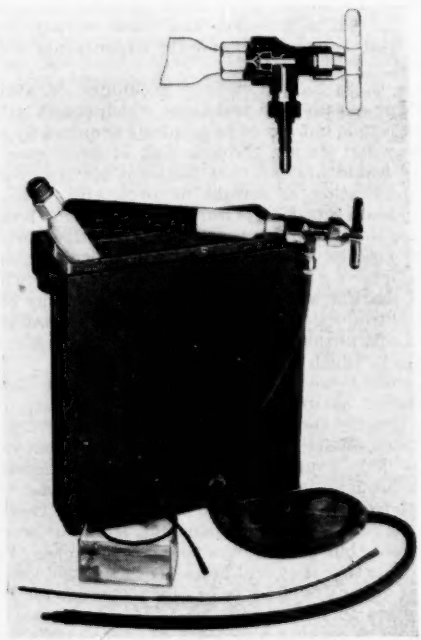
Even when the opportunity arose, this instinctive reaction, so comfortably rationalised, still delayed trial of the method until its chance of success had become about as unfavourable as possible. It is chastening to reflect that, had it failed on that occasion, we should have been more than ever tempted to reject it finally. So much by way of apology to its originator. The occasion of its trial was as follows :

A primigravida, aged 31, was delivered by Mr. C. K. Vartan after a labour lasting thirty hours. Under open ether a difficult breech extraction was done by Lovesett's method, and forceps were applied to the aftercoming head. The infant was born white and toneless. The air-passages were cleared, the cord was tied, and oxygen was directed through a tube into the mouth at 4 litres a minute after the tongue had been drawn forward. The heart was beating at 70 a minute. The first gasp occurred after 5 minutes, and then at intervals of 45, 40, and 30 seconds, giving hope that breathing was beginning. However, for half an hour there were only gasps which weakened, became less frequent, and finally became almost imperceptible. After 65 minutes the heart was beating irregularly at 35–40 a minute, and its sounds were only just audible.

It was at this point that Akerren's method came to mind. Catheters and connections were quickly assembled, and oxygen was passed into the stomach, whose distended outline was immediately seen through the lax abdominal wall. 2 minutes later (75 minutes after birth) the infant became pink, and full regular respirations were established with dramatic rapidity. Thereafter the baby gave no cause for further anxiety and when last seen at 3 years of age he appeared to be developing normally.

Experience of 47 Other Cases

After this favourable experience we decided to use this method whenever severe asphyxia did not respond to the routine procedures described. In the consecutive



Apparatus for the resuscitation of the newborn in home confinements.

series of 48 infants so treated 7 did not respond; 41 were resuscitated, but 3 subsequently died (at 1¾ hours, 12 hours, and 2½ days). In those that responded the usual sequence of events was a change in the infant's colour to pink, followed by the onset of breathing at a variable time. In our series this ranged from 1 to 75 minutes. The accompanying table shows that most of the infants were breathing within five minutes, though 2 took as long as an hour.

Minutes before breathing began	1	2	3	4	5	10	15	15+
Number of infants	14	6	7	0	3	3	3	5

At necropsy severe cerebral damage was found in 3 babies, and in the remaining 7 the only findings were atelectasis and evidence of asphyxia.

Apparatus for Home Confinements

As oxygen is usually available only in hospitals, the practice of this method is at present restricted. Accordingly we have devised a miniature portable cylinder * (see figure) which could be included in the general practitioner's or the midwife's equipment. It is supplied in an easily portable box containing two miniature cylinders, a screw tap, rubber tubing, a pressure bag, and two Jacques catheters; the box and contents weigh 5 lb. The tap is screwed on to the cylinder, and the handle is turned in a clockwise direction; this drives a piercer into the cap, whereupon oxygen fills the bag and then flows out at 1 litre a minute. There is enough oxygen in each cylinder to give a continuous supply for 20 minutes. This equipment will, we hope, enable the doctor or the midwife to apply this method of resuscitation in the home.

Discussion

In spite of the large amount of experimental work, the way in which respiration is initiated in the newborn infant is still not clearly understood. Moderate anoxia and sensory stimuli are the main factors (Smith 1951b). If for any reason respiration is not established, the continued anoxia leads not to stimulus but inevitably to greater depression of the respiratory centres, with still less likelihood of the establishment of breathing. The aim of treatment, therefore, is to prevent this depression by supplying oxygen, although this cannot of course directly affect the primary cause of failure of the respiratory centres to function. The delivery of oxygen to the respiratory centres has been the aim of many different resuscitative measures. That it is rapidly absorbed from the gastro-intestinal tract has been conclusively demonstrated, but what makes the respiratory centres respond in one child and not in another remains a problem, as is illustrated by the cases when, in spite of our endeavours, no cause for failure to respond could be found either clinically or at necropsy. No microscopic examination was made for the presence of hyaline membrane.

It may be objected that the claim made here for this method could be established only by a controlled study; but, once it was found to be clinically effective, it became impossible to withhold it from any infant who might be benefited. In our experience Akerren's method is simple, safe, and effective. We have also used it successfully several times for the treatment of severe cyanotic attacks in premature infants as originally practised by Ylppö (1935).

The miniature light-weight oxygen container described will enable this method of resuscitation to be practised not only in hospitals, as at present, but also in domiciliary midwifery.

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*Can be obtained from Sparklets Ltd., Queen Street, Tottenham, N.17.

THE MANAGEMENT OF POSTMATURITY

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"Make no more pretence
"Of new discoveries, whilst yet thine own
"And nearest, little world is still unknown."
GEORGE HERBERT, *Travels at Home*. 1633

THE title of this paper, though not strictly accurate, is reasonably apposite. Actually this is a study of cases in which pregnancy was prolonged past the expected date of confinement calculated by Naegele's rule.

In the present state of knowledge it is impossible to make an exact clinical study of postmaturity, owing to the lack of any clear definition and to the difficulties in diagnosis. Possibly because of these difficulties, and because postmaturity and prolongation of pregnancy are often accepted as synonymous, there is a wide variation of views on the importance of this subject. Kamperman (1948) says that "postmaturity is a state of mind of the obstetrician . . . in most clinics the problem is not considered important enough to deserve much study"; and Holmes (1948) says that "Postmaturity is a figment of the imagination." On the other hand, many workers hold that postmaturity is important.

It might be supposed that the problem could easily be solved by simple pragmatic methods, such as the study of fœtal-mortality figures. The obvious difficulties to this are the lack of exact definition of postmaturity and the obscurity of diagnosis. It is for this reason that we have investigated postmaturity in relation to the expected date of confinement estimated from the last menstrual period by Naegele's rule. We fully realise that this method is not free from error as regards postmaturity. This study, however, is concerned not with postmaturity in its exact sense but as to whether it matters if a woman has her confinement at the expected date or later. We believe that in women who are reasonably certain of the date of their last menstrual period, and after a correction has been made for a menstrual cycle longer than twenty-eight days, this rule is still the most useful guide in the management of these cases. It has the additional advantage of requiring no exceptional skill or any special methods and can therefore be used by practitioners everywhere.

We are aware that this scheme of management is open to the criticism that each case is not treated individually. But individual treatment, avoiding routine induction, is a counsel of perfection, and, though it may become possible in the future, is not applicable in the present state of knowledge. In fact, slavish adherence to individual treatment is a cause of the high fœtal mortality in postmaturity.

A few workers (Clayton 1941, McKiddie 1949, Hamilton 1950, Latto 1951, Rathbun 1943) have published reports on the fœtal mortality in pregnancies prolonged past the expected date of confinement, and almost without exception they show an increase in the fœtal mortality. Latto (1951) and Rathbun (1943) by excluding certain cases seek to show that the increase is not in fact substantial; but they offer no conclusive evidence to justify the exclusion of these cases. As corrected figures are always debatable, we have made no correction in our study, and we hope that, if others can be interested to carry out similar investigations, it will be possible to gather series large enough to make correction unnecessary.

Method

In our investigation at Park Hospital we divided the patients attending our antenatal clinic into two groups by nothing more eclectic than which clinic they attended —either that of one of us (D. C. R.) or of one of his colleagues who kindly allowed his cases to be used for this study. In one group, called the induced group, the patients were admitted on the day before the expected date of confinement, on which day they were given such simple stimulants as a hot bath and an enema, but no drugs; and, if labour had not started on the next day, the membranes were artificially ruptured. There was absolutely no obstetrical selection in either group. For example, in the induced group labour was induced whether the women were primigravidæ or multiparæ, whether the head was engaged or high and mobile, and even if there was a breech presentation. In a few of the earlier cases the patients were given 'Pituitrin' on the expected date of confinement, but this practice was discontinued for the reason discussed below.

TABLE I—FŒTAL MORTALITY DUE TO STILLBIRTHS

Group	No. of cases	No. of stillbirths
Controls (mature at term)	1229	19 (1·54%)
Induced group	203	3 (1·47%)
Postmature group	410	19 (4·63%)

In the second group, called the postmature group, the women were allowed to continue to spontaneous labour unless, as happened in a few cases, labour was induced for some other obstetric reason.

A third group of cases acted as controls; these were the unselected cases of natural delivery at term in the past two years—term for this purpose being from seven days before to seven days after the expected date of confinement.

As regards the induced cases we do not suggest that the results could not be equalled or even possibly improved by allowing an interval of seven to ten days to elapse after the expected date of confinement, as suggested by Mills (1950). To find this safe margin further study is required. We chose the day after the expected date of confinement to induce labour because we felt that some starting-point was needed, and because, if our results were reasonable, it would provide a ready answer to those who might argue that we would have a high proportion of premature babies.

Results

Table I shows the fœtal mortality due to stillbirths. The postmature cases in this table were more than seven days past the expected date of confinement. They outnumber the induced group simply because the resident staff, who see a large number of the cases, often did not arrange for their admission on the correct date, the routine being new to them.

TABLE II—STILLBIRTH-RATES IN POSTMATURE CASES

Postmaturity	No. of cases	Stillbirths
From 7 to 13 days	261	6 (2·31%)
14 days or more	149	13 (8·72%)

Table II shows the difference in stillbirth-rates between postmature cases up to fourteen days past the expected date of confinement and those more than fourteen days past it. The differences between the fœtal mortality-rates of the postmature groups and between the induced group and the group in which the postmaturity was more than 14 days are statistically significant. Table III shows the degree of agreement between our figures for stillbirth-rates and those published by other workers. Table IV gives the incidence of postmaturity both in our own cases and in those published by other workers.

TABLE III—COMPARISON OF STILLBIRTH-RATES

Authority	No. of postmature cases	Stillbirth-rate: Mature cases	Stillbirth-rate: Postmature cases	Criterion of postmaturity
Hamilton (1950) ..	171	..	8·2	291 days +
Latto (1951)	171	..	5·2	294 days +
McKiddie (1949) ..	..	1·3	2·8	287 days +
Clayton (1941) ..	..	4·25	6·15	294 days +
Present investigation ..	410	1·54	4·63	287 days +
" " ..	149	1·54	8·72	294 days +

There was 1 cæsarean section in the induced group and 8 in the postmature group. The instrumental rate in the induced group was less than half that in the postmature group. This is in agreement with Clayton (1941), McKiddie (1949), Hamilton (1950), Latto (1951), and Rathbun (1943). In the postmature group there were 3 deaths in utero before the onset of labour.

In the induced group containing 203 cases it was necessary to rupture the membranes in 162 cases. The interval from the time the membranes were ruptured until delivery was as follows: less than twenty-four hours 61 cases; from twenty-four to forty-eight hours 70 cases; and more than forty-eight hours 31 cases. The interval between the rupture of the membranes and the onset of labour, judged by the start of regular pains, was more than forty-eight hours in 10 cases: two to five days in 5 cases, six days in 3 cases, and seven days in 2 cases. One of us (D. C. R.) was away through illness for a long time when these cases occurred, and owing to a misunderstanding no uterine-stimulant drugs were used; if they had been used, several of these long intervals might have been avoided. One of the 3 fœtal deaths took place in a case in which the membranes were ruptured for a hundred and fifty hours before delivery. In 16 cases labour lasted more than twenty hours. The smallest baby in the induced group weighed 5·4 lb. The average birth weight was almost exactly equal to that of the controls.

TABLE IV—INCIDENCE OF POSTMATURITY

Authority	Incidence %: Criterion 287 days	Incidence %: Criterion 294 days
Gibson and McKeown (1950) ..	31·72	..
McKiddie (1949)	24·10	..
Clayton (1941)	..	7·30
Latto (1951)	..	3·70
Present investigation	25·20	9·08

As will be seen from the combined figures in the tables, the fœtal mortality for cases fourteen days or more overdue is about 7%. If the incidence of these cases is also about 7%, on an annual birth-rate of 800,000 the fœtal mortality is about 3920 per annum. If the fœtal mortality for the induced cases can be shown by further work to correspond to our figure of less than 2%, the yearly fœtal salvage would be about 3000 per annum, a rather startling figure.

Discussion

Our reasons for making this investigation were that we felt that the question of postmaturity needed clarifying and we wished to assemble evidence on which to base the management of these cases. Our argument runs as follows:

(1) It is impossible at present to diagnose postmaturity either clinically or radiologically with anything approaching sufficient accuracy upon which to base any treatment.

(2) It follows that it is impossible to treat all the cases individually. What is really necessary before cases can be treated individually is an accurate method of detecting early and minor degrees of deterioration of the fœtal condition in utero.

(3) There is strong theoretical evidence that the fœtal environment deteriorates after term. That some fœtal deaths after term are due to malpresentations or to long and difficult labour rather than to intra-uterine physiological changes alone, or to a combination of these two factors, does not in any way affect the main issue.

(4) Therefore labour should be induced at or after a certain interval following the expected date of confinement. We believe that a certain degree of prematurity is preferable to the same degree of postmaturity. The interval that can safely be allowed after the expected date of confinement is a matter for further investigations. From our present knowledge we feel that it will probably prove to be about seven to ten days.

Not one of the criteria commonly used in the diagnosis of maturity can definitely foretell when it has been reached. Even if they are all used, the margin of error is a few days; therefore they cannot be used as a certain guide to treatment. These criteria are:

(1) The calculation of the expected date of confinement by the Naegele rule. This has already been discussed.
(2) Estimation from a single coitus.
(3) The growth of the uterus.
(4) The date of quickening.
(5) The size of the fœtus.
(6) The feel of the fœtal skull on combined abdominal and vaginal examination.
(7) Rigidity of the fœtus.
(8) Oligohydramnios.
(9) The condition of the cervix.
(10) Radiology.
(11) A test induction with pituitrin.

Rigidity of the fœtus, due to increased tone in the skeletal muscles, and oligohydramnios have been emphasised by Wrigley (1946) as important signs. But can anyone really assess the tone of the fœtal muscles or a decrease of liquor accurately enough to justify embarking on a certain course of treatment of such importance? We have specially looked for these signs, and although we agree with Wrigley that oligohydramnios may at times be marked, its occurrence is irregular, and both signs are usually too esoteric to have any value as a guide to treatment.

As regards ***radiology***, there are still no signs either in centres of ossification or in skeletal configuration which can be used as accurate criteria of postmaturity.

Some workers state that *pituitrin* and *pitocin* are only effective when the fœtus is mature, and can therefore be used to test maturity. We have no real information on this subject; but, apart from a few early cases in the present series, we have not used pituitrin as part of a medical induction. We have, of course, used it in the past, but we felt that it would not help us in the present investigation, owing to doubt about its action. In cases in which it is given and has no effect one cannot be certain that the reason for this is that they are not at term, until it can be shown that pituitrin always stimulates the uterus at term in every case.

We therefore feel that, apart from the cases where there is an obvious discrepancy between the signs and symptoms and the expected date of confinement, these signs and symptoms of postmaturity have not the value that some impute to them. We agree that, when several of these signs are present together, one can often presume postmaturity with reasonable confidence. But they still tell us very little about the health of the fœtus, and in the many cases in which they are absent we are virtually helpless unless we have a scheme of management such as the one we propose. We only suggest such a scheme until more accurate diagnosis about the fœtal condition renders it unnecessary.

We shall not discuss in detail all the physiological factors which may endanger the life of the fœtus in utero. It is now fairly generally agreed that the fœtal environment deteriorates after term: to illustrate this deterioration we cite (under the heading of Bibliography) a few of the many recent publications on fœtal asphyxia. Of the many factors involved—e.g., the fœtal and maternal circulation, the efficiency of the placenta and placental reserve, and the transference of metabolites and electrolytes—the factor which is most easily understood and which appears to be most important is fœtal asphyxia. A great deal of work has been done on this subject tending to show that the oxygen content and saturation of the fœtal blood decrease after term.

Walker (1953) found that at the 30th week of pregnancy the average oxygen content in the umbilical vein was at least 14 vols. %, with a saturation of 70%. The arterial content and saturation were roughly half the venous. At the 39th week the oxygen content was reduced to 12·4 vols. %, giving a saturation of 60%. At 42 and 43 weeks the venous oxygen content was, on the average, as low as 6–9 vols. %, the saturation being 30–40%. An important finding of Walker's was that throughout pregnancy the difference in oxygen content between fœtal arterial and venous blood remained very constant at about 5–7 vols. %.

From Walker's work it is evident that if the venous content diminishes to 6–9 vols. %, as it often does after term, the arterial oxygen content will be so low that the life of the fœtus is in jeopardy. This must lead to especial danger if the labour is in any way difficult or prolonged. We are not in a position to comment on the importance of this theoretical hazard, but there is little doubt from a practical standpoint that the fœtal mortality is increased after the expected date of confinement (Clayton 1941, McKiddie 1949, Hamilton 1950, Latto 1951, Rathbun 1943).

If these hypotheses are accepted, it follows that it is safer in the present state of our knowledge to treat cases according to some rule rather than individually. We realise that this is unsatisfactory but feel that it is much safer until such time as we can judge the condition of the fœtus in utero. In cases which appear quite normal the fœtal condition may be deteriorating dangerously. Wrigley (1946) scathingly quotes the reply of students at two London medical schools when asked how they would treat patients who were overdue: "When 14 days have elapsed, labour should be induced." According to Wrigley, "This reply is as fatuous as it is dangerous." But is it? Though we do not know the exact interval that can be safely allowed after the expected date of confinement, it appears from the few figures available to be about fourteen days, though possibly this is rather too long. Surely it is a very much safer plan to induce labour then than to rely on such exiguous signs as rigidity and oligohydramnios.

In brief, our suggested plan for managing these cases is that, except in cases where there is serious doubt about the history, it is dangerous to allow a woman to exceed her expected date of confinement by more than a short period, and that after that period labour should be induced. What that period is we hope that further work will show, but it seems to be about seven days. In trying so learn more about this problem we shall be well advised to keep in mind Cardinal Newman's dictum that "the logic of facts is the most thorough teacher."

Summary

Two series of cases in which pregnancy was continued past the expected date of confinement were studied. In one group labour was induced a day later by rupture of the membranes, and in the other group the pregnancy was allowed to continue until the onset of spontaneous labour.

The results as regards fœtal mortality were very much better in the induced group, and the inductions did not appear to give rise to any additional hazard or difficulty.

It is therefore suggested that, in the present state of our knowledge, these cases should be treated by routine induction rather than individually.

We hope that further work will show what period, if any, can be safely allowed after the expected data of confinement. At present we think it will probably be about seven days.

We wish to thank Dr. W. R. Addis for his kindness in allowing certain patients under his care to be used in this investigation; and Dr. S. R. A. Ayling, Dr. B. Didsbury, Dr. D. D. Davies, Miss J. K. M. Clift, and Miss B. E. Batty for their invaluable assistance in inducing labour in many of the cases.

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"REACTIONS" TO DEXTRAN

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IN 1949 Thorsen reported that in Sweden the incidence of reactions of all types associated with the infusion of solutions of dextran was only 0·8%, compared with 8·2% of reactions after blood-transfusions. A similar freedom from undesirable effects has been the experience of one of us (A. W. W.) after giving more than 500 infusions of dextran solution of both Swedish (Pharmacia) and British (Benger) manufacture in the treatment of various hypotensive states in surgical patients. This low incidence of reactions associated with the use of dextran has been regarded as one of its most important advantages as a substitute for plasma. However, Pulaski (1951) reported a reaction-rate of 40% when Swedish dextran was injected into normal soldiers, and in 1952 Thorsen (personal communication) also found that reactions commonly followed the infusion of Swedish dextran solutions into normal volunteers. No satisfactory explanation has been given of the rarity of all types of reactions when dextran is infused into patients whose blood volume has been reduced by the loss of blood or plasma, and of their relative frequency when the recipient's blood volume is normal.

In 1952 a highly fractionated preparation of dextran became available in which 65% of the material was of molecular weight between 130,000 and 250,000, and more than 40 litres of this preparation has been infused by one of us (A. W. W.) into shocked patients, with only two mild and transient reactions. It was decided to repeat the experiments of Thorsen and of Pulaski by infusing some of this solution into normal volunteers to see if it produced a high rate of reactions when the blood volume was within normal limits.

Methods

The five volunteers were healthy, fully grown males aged 21–38. They were recumbent for half an hour before and throughout the infusion and for a varying time thereafter. Blood was withdrawn from a vein in the left forearm, and the infusion of dextran was given through the same needle; the duration of the infusion varied from 500 ml. in 47 minutes to 1 litre in 110 minutes; four of the volunteers received 1 litre, and the other 500 ml. of solution. Further samples of venous blood were withdrawn about 10 minutes after the infusion was finished and at short intervals during the first 6 hours, at 24 hours, and daily thereafter. The packed-cell volume was measured in four volunteers on blood treated with Wintrobe oxalate mixture and then centrifuged at 3000 r.p.m. for 20 minutes. The remainder of each blood sample was allowed to clot. The total serum-protein level was determined by the micro-Kjeldahl method of Ma and Zuazaga (1942) after precipitation with trichloro-acetic acid. Albumin was similarly determined in the filtrate after saturation of the serum with magnesium sulphate (Popjak and McCarthy 1946). Dextran was measured by a modification of the anthrone method of Bloom and Willcox (1951). The bladder was emptied before the infusion began, and urine was collected in 6-hour specimens during the first four days and in 24-hour specimens thereafter, and the volume and dextran concentration (modified anthrone method of Bloom and Willcox (1951)) were measured. The pulse-rate and systolic and diastolic blood-pressures were repeatedly measured before, during, and after the infusions of dextran, and the skin and general state of the volunteers were closely observed.

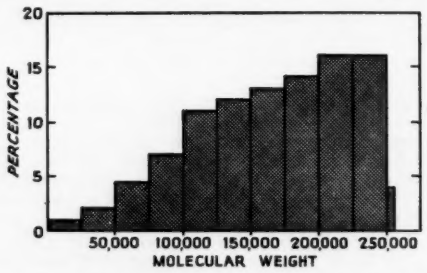

Fig. 1—Distribution of molecular weights of 6% dextran solution.

The solution (batch 3715/3/ex 225) contained 6% dextran in 0·9% saline solution and had the molecular composition indicated in fig. 1. The crude dextran was prepared by the action of *Leuconostoc mesenterioides* on sucrose.

Results

"*Reactions*"

Reactions of various degrees of severity developed in all five volunteers. Wealing, redness, and itchiness of the skin appeared in places where there was pressure on the skin—e.g., under the neckband of the shirt, the tops of the socks, the trouser waistband, and the sphygmomanometer cuff. In two volunteers these effects appeared after the infusion of about 700 ml., and in the others 20 and 60 minutes after completion of the infusion. The wealing persisted for periods of up to $2^1/_2$ hours. A sensation of fullness of the head was felt by three volunteers, in two there was also flushing of the face, and in one of these puffiness of the eyelids, especially towards the end of the infusion. Two noticed retrosternal pain during the infusion, and two experienced nausea. In three there was a sensation of illness and fullness of the chest, which began when the skin reactions were subsiding and lasted for about two hours.

After completion of the infusions change in posture was followed by vasomotor disturbances which in one volunteer were thought to be vasovagal; but only in this one instance was improvement produced by lowering the head. In a second volunteer lowering the head made

the disturbance more severe. All four volunteers who experienced this reaction could stand up without ill effects from about five hours after the end of the infusion, but at this time three were euphoric and all felt "ill" in various ways. They experienced "pounding" and fullness in the head and chest which were made worse by even minor exertion; tolerance to exercise was much reduced, and breathlessness developed on climbing a short flight of stairs and persisted to various degrees for a week or more after the infusion.

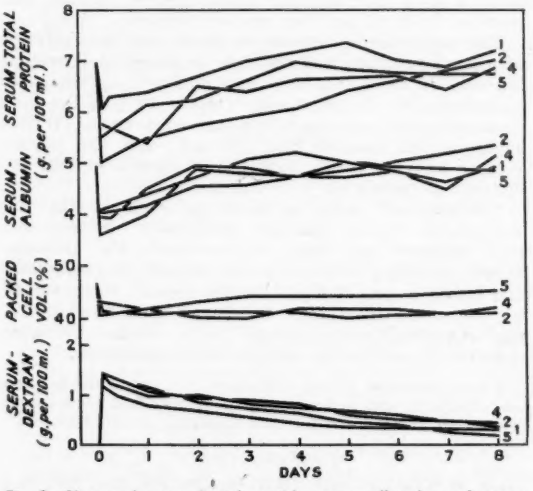

Fig. 2—Changes in serum-total protein, serum-albumin, and serum-dextran levels and in packed-cell volume in the four volunteers who received 1000 ml. of 6% dextran solution.

Blood-pressure and Pulse-rate

So long as the volunteers remained recumbent, there were only slight alterations in systolic and diastolic blood-pressure and in pulse-rate. When volunteer 1 sat up an hour after the end of the infusion and hung his legs over the side of the table, there was a very rapid fall in systolic blood-pressure from 148 to 70 mm. Hg, the diastolic pressure fell from 100 mm. Hg to an unrecordable level, and the pulse-rate rose from 80 to over 120 a minute; when he lay down, the blood-pressure and the pulse-rate returned to their previous values. Similar but less pronounced reactions developed in the other volunteers, except that in volunteer 2 the pulse-rate fell when the blood-pressure fell.

Urinary Excretion of Dextran

Two volunteers excreted 6% of the injected dose of dextran within two hours of the end of the infusion, and within eighteen hours three had excreted 10% and the other two 8% of the dose. The total quantity excreted in the urine during the 48 hours after the infusion ranged from 8 to 11%; after 48 hours there was too little dextran in the urine to be measured accurately.

Changes in the Blood

Fig. 2 shows some of the changes in packed-cell volume and the serum levels of total protein, albumin, and dextran during the eight days following the infusion of 1 litre of 6% dextran solution into four volunteers. The initial reduction of total protein in the serum was about equal to the initial increase in serum-dextran level. Thereafter the serum-dextran level declined steadily; but, although within 4 days in three volunteers the levels of both total protein and albumin rose above their initial values, the packed-cell volume was below the initial value after eight days.

The changes during the first 24 hours after the infusion of 1 litre of dextran into volunteer 4 are shown in more detail in fig. 3. During the first 8 hours there were distinct changes in packed-cell volume but only slight fluctuation in the serum levels of total protein, albumin, and dextran. Similar rapid changes in packed-cell volume in the absence of reactions have been observed previously by one of us (A. W. W.) in shocked patients after infusions of dextran, and by Thorsen (1949) after the infusion of Swedish dextran.

Such pronounced alterations in cell concentration occurring during the estimation of plasma volume by the dye-dilution method caused wide discrepancies in the volumes obtained, and it was thought wiser to discard the results of these direct measurements of plasma volume.

The plasma volume of a normal adult male is 7% of the total body-water, which in turn is 60% of the "ideal" body-weight for a particular age, sex, and height; plasma volume is thus 4·2% of "ideal" body-weight. Plasma volume was calculated from their "ideal" body-weight for volunteers 2, 4, and 5, who each received a litre of dextran solution. From this calculated plasma volume and the observed packed-cell volume before the dextran was infused the total volume of red cells in circulation was calculated. Since Meyer et al. (1952), using P^{32}, did not find any significant alteration in red-cell volume after the infusion of a litre of dextran into normal people, it was assumed that in our volunteers the total red-cell volume remained constant during and after the dextran infusion, and the subsequent changes in plasma volume were calculated from the observed changes in packed-cell volume. From these plasma volumes a good approximation of the variations in the total quantities of total protein, albumin, and dextran in circulation within the vessels can be obtained. The results obtained in volunteer 4 are shown in fig. 4.

In three of our volunteers the increase in plasma volume immediately after the completion of the infusion of a litre of dextran solution was 300 ml., 1000 ml., and 1300 ml.; similar large increments have been reported by Haynes and DeBakey (1951) and Meyer et al. (1952). Within about 2½ hours, however, the plasma volume in each of our volunteers had diminished to less than that before the infusion of dextran was begun. By 24 hours after the infusion the plasma volume once more had risen well above the initial volume, and this increase

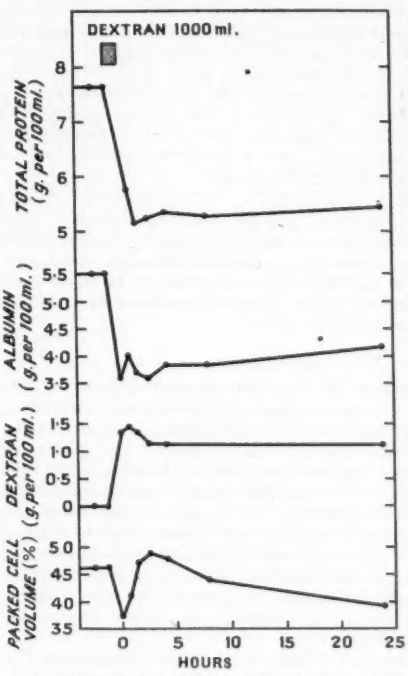

Fig. 3—Volunteer 4: detailed changes in serum-total protein, serum-albumin, and serum-dextran levels and in packed-cell volume during the first 24 hours after infusion of 1000 ml. of 6% dextran solution.

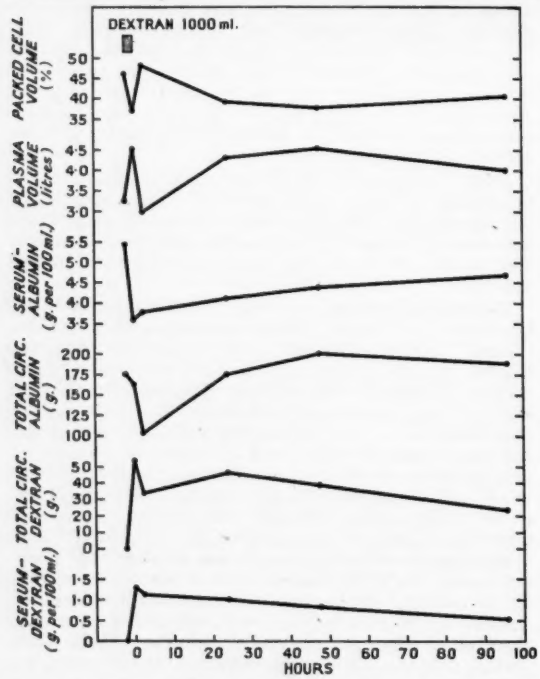

Fig. 4—Volunteer 4: changes in packed-cell and plasma volumes, serum-albumin and serum-dextran levels, and quantities of total circulating albumin and dextran after infusion of 1000 ml. of 6% dextran solution.

was maintained at 48 and 96 hours. Immediately after the completion of the dextran infusion there seemed to be very little alteration in the quantity of serum-total protein and serum-albumin in circulation, although the concentrations of these fractions were greatly reduced. However, $2^1/_2$ hours later up to more than 30% of the initial quantity in circulation of total protein and up to more than 40 per cent. of the initial quantity of circulating albumin had left the vessels. During this period there was also a loss of up to 30% of the dextran present at the end of the infusion.

During the period from $2^1/_2$ to 24 hours the plasma volume again increased and the total quantities of total protein, albumin, and dextran circulating in the serum also increased, but their concentrations remained low. From 48 hours onwards there appeared to be more total serum protein and albumin in circulation than before dextran was administered.

Discussion

There appeared to be two distinct phases in the "reactions" which the present volunteers exhibited. The first was characterised by urticaria; it began during or soon after the infusion was completed and lasted for various periods up to two hours or more after the infusion ceased. The second phase was characterised by vasomotor instability; it usually began after the infusion had been completed, and appeared to be related in time to the rapid increase in packed-cell volume and the underlying pronounced reduction in plasma volume; as the packed-cell volume decreased and the plasma volume increased, the tendency to acute vasomotor disturbance declined.

Thorsen (1949) and Bull et al. (1949) explained the reduction in albumin and total-protein levels during the week after dextran infusion as being due to osmotic suppression of albumin by the circulating dextran. However, it appears likely that at this time there may be more rather than less albumin in circulation. The prolonged increase in plasma volume indicated by the calculations is in accord with the greatly reduced exercise tolerance, precordial pain, fullness of the head, and breathlessness on exertion exhibited by these volunteers, with the slow fall in the plasma-dextran level and with the small urinary excretion of dextran.

Summary

A 6% solution of dextran in 0·9% saline solution was infused into five normal volunteers, of whom four received 1000 ml. and one received 500 ml.

The rapid initial increase in plasma volume, dilution of plasma proteins, and decrease in packed-cell volume induced by these infusions were followed by the rapid movement out of the vessels of up to 30% of the total circulating plasma-protein and infused dextran. Within 12 hours this transfer was reversed, and the plasma volume and the total quantities of plasma-protein and dextran in circulation were increased.

"Reactions" were produced in each of the five volunteers. These reactions have been resolved into two phases: the first, characterised by urticaria, developed during or soon after the infusion was completed and lasted for up to 2 hours; the second, characterised by vasomotor instability, developed after the infusion was completed and appears to be related to rapid reduction in the volume of plasma in circulation.

We are indebted to the volunteers who submitted to these investigations, and to Benger's Laboratories Ltd. for a supply of dextran solution and for data regarding its composition.

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THE RISKS OF TONSILLECTOMY

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TONSILLECTOMY occupies a curious place in surgery. It is one of the commonest of all items on the operating-list of any hospital, for many thousands of tonsillectomies are done every year in England, but every surgeon faces a tonsillectomy with anxiety, for the risk is always present in his mind. Before the late war the mortality cited for one London centre was 1 in 1000, but figures do not accurately reflect the difficulties, nor do they record the conditions in small hospitals, where both surgeon and anæsthetist may be less skilled than in a main centre.

The account of the cases which follow form the experience of one surgeon; they were not all his own cases, for some were under the care of colleagues; but each disaster was so unusual and so tragic that it was recounted in detail and discussed by the whole hospital staff, and therefore could fairly be said to have entered the experience of everyone on the spot, whether directly concerned with the case or not.

Before discussing the case-records in detail, it might be useful to contrast the risks of tonsillectomy at the present time with those of twenty years ago. There is one risk, for instance, which has nearly disappeared—the chance of serious infection. Before the discovery of penicillin, an otitis media was quite common after

tonsillectomy in children, and many of the older surgeons can remember a subsequent death from meningitis. Serious infection after tonsillectomy is now rare, although penicillin is seldom given beforehand as a precaution. Perhaps penicillin has made the wards safer, for a serious cross-infection of any kind is now unusual. The anæsthetic risk also is less now when the anæsthetist is of specialist rank, but more will be said about this later; a surgeon naturally cannot make expert comment on the anæsthetics of the present day, but he has, at all events, as great an interest in their success as any other worker in the theatre.

The risks can be divided into four groups—those at the time of operation, those immediately after operation, those within twenty-four hours, and those later than twenty-four hours after operation.

Anæsthesia

The surgeon needs for tonsillectomy a patient who is deeply anæsthetised and has had a smooth induction of anæsthesia. A light anæsthesia and a troublesome induction both increase the bleeding, and a glance at the patient when he is wheeled into the theatre from the anæsthetic room is enough to enable the surgeon to make a fair guess at the difficulty of operation, provided that there is no peritonsillar fibrosis.

Sudden death from the use of too much anæsthetic has not happened in my experience, although it is a risk which might occur to anyone who considers the operation. The difficulty has lain in the opposite direction, for I find the inexpert keep their patients under too-light anæsthesia. Davis's or Boyle's gag is a traditional instrument and a trap for the beginner, for no-one can anæsthetise an adult through the tube built into the gag if he uses ether alone, and a child needs a very large flow of ether, and even then steadily regains consciousness throughout the operation, if he is well grown. The best anæsthetic I have seen for tonsillectomy is intravenous thiopentone combined with an intratracheal tube which delivers oxygen.

Risks at Operation

The risk which is uppermost in the mind of the surgeon is hæmorrhage. Hæmorrhage at operation is likely if there has been a recent infection—e.g., a sore throat, and a cold—or if there has been a peritonsillar cellulitis at any time, because of the resulting peritonsillar fibrosis.

The details of ligature of vessels in the tonsillar bed would be out of place in this article, but the methods of dealing with severe hæmorrhage must be listed—they are, in order, a ligature introduced into the tonsillar fossa with a curved needle, suture of the anterior and posterior pillars, and suture of the pillars over a gauze swab. If hæmorrhage is severe, the operation may, rarely, have to be abandoned.

A young doctor had been in bed a month before with a severe quinsy and had only recovered from the infection a fortnight before admission to hospital for tonsillectomy. He bled so freely that onlookers thought he might die on the table, in spite of two blood-transfusions. The surgeon succeeded in removing only one tonsil but managed to stop the bleeding by ligatures over a gauze swab. The other tonsil was removed two months later without incident.

The mistake here was to try to remove the tonsils too soon after a quinsy. Tonsillectomy is always difficult when there has been a quinsy because of the fibrosis, which prevents the cut blood-vessels from retracting; but if an adequate time—e.g., six weeks—is allowed to pass before operation is undertaken, the surgeon's task will be easier.

It is unfortunately true that the neater the surgical work the greater is the risk of bleeding at the time of operation or in the first twenty-four hours. Serious bleeding, for example, is less common after a guillotine operation than after complete dissection. This is not to be taken as a recommendation of the guillotine operation. The risk of hæmorrhage after tonsillectomy with scissors is only slightly greater than after blunt dissection, and there is no doubt that the patient feels more comfortable if his tonsils have been cut out with a sharp instrument. I vary my practice in this detail and use scissors in London and a blunt dissector in the country, but never the guillotine. The following incident illustrates the risk of sharp dissection:

A surgeon of international reputation was asked to visit a foreign country shortly after the war to demonstrate his method of tonsillectomy, which relies chiefly on the use of scissors. He operated on four cases, and the onlookers said afterwards that they had never seen the tonsils so cleanly and neatly removed. Unfortunately three out of the four patients bled within twenty-four hours of operation. The surgeon had, of course, kept all four patients on the operating-table until he was satisfied that the immediate bleeding had stopped, for this is the present custom no matter which technique is used.

An example of a mistake of routine is the following:

A child was admitted for tonsillectomy, which was undertaken on the day following admission. The house-surgeon removed the tonsils without incident; but, when he used the adenoid curette, there was profuse bleeding. He pushed the sucker tip into the nasopharynx, but it quickly became blocked; so he abandoned it and used the sucker tubing alone to remove the blood. At this point the child suddenly collapsed and died. Nothing was found at necropsy to explain the sudden death, but inquiry showed that the child had had a temperature of 99·6°F on the night of admission. This should have been enough to make the house-surgeon postpone operation. He would have been wise also to have tried pressure with gauze before he used the sucker.

The general rule is that no-one should be prepared for operation if his temperature has been higher than 99°F on the preceding evening. Many people have a slight temperature on admission (possibly from anxiety in strange surroundings); hence a temperature of 99°F can be ignored, but a higher temperature must stop a deliberate operation like tonsillectomy.

The next period of risk is during recovery from the anæsthetic. The position of a patient in bed after operation is generally agreed: he should be on his side with his face visible, and both hands should be in front of the chest. A good way to keep this position is to flex the leg which lies underneath. If the patient is not on his side and the airway is not free, there is a risk of sudden death from asphyxia by the tongue falling back.

A surgeon of considerable experience joined the Services at the beginning of the war. He removed the tonsils of a patient in the usual way and returned to the sister's room for a cup of tea. Ten minutes later he went to the ward where his patient was lying and found the bed surrounded with screens. He asked why this had been done, and was told that it was the custom to surround the bed with screens in the general ward when a patient was recovering from an anæsthetic. The surgeon was not satisfied and went to examine the patient behind the screens. He found that he had rolled on his back and was dead.

The lesson of this case, which is recognised in most hospitals, is that a patient must be watched continuously until he recovers from an anæsthetic. So far from screens being used, he should be left in a bed where everyone entering a ward can see him, unless there are enough available nurses for one to remain at his bed. When a patient begins to recover consciousness he becomes restless and coughs out the airway. A trained person must be by the bedside from this point until consciousness is complete to watch the breathing and to report unusual bleeding (there is always a small amount of blood coughed out during recovery, and experience is needed to tell whether it is due to active bleeding or not). Maintenance of the airway may need a tongue clip and a gag such as Mason's gag, which should lie by the patient's bed together with a sucker and rubber tubing.

If active bleeding is noticed just before complete consciousness returns, the patient should be brought back to the theatre at once.

A man of 45 was admitted for tonsillectomy. His tonsils were removed with little trouble, and he was sent back to the ward. Word, was, however, sent twenty minutes later that the bleeding was more than usual. The surgeon went to the ward and confirmed the message; so the patient was returned to the theatre, where a bleeding vessel in the right tonsillar fossa was found and ligatured. There was no more trouble, and the patient knew nothing of his mishap.

The important fact of this story is the stage at which the bleeding was discovered. If a second operation has to be undertaken for hæmorrhage, the best time is certainly before recovery from the first operation.

The next story is exceptional.

A girl of 11 was admitted for removal of adenoid remains. The anæsthesia was not entirely satisfactory, for the child was not deeply unconscious. The adenoids were, however, removed, and the patient was sent back to the ward. An urgent message was sent from the ward during the next case to say that the child had stopped breathing, and that the pulse could not be felt. She did not recover, in spite of emergency bronchoscopy. At necropsy a piece of adenoid tissue was found in the right bronchus.

The adenoid tissue had certainly caused death from shock by sudden inhalation. This rare accident might have been avoided if a guarded curette had been used for a guarded curette catches with its teeth any adenoid tissue which is cut by the blade. The only objection to the use of a guard is that it tears the posterior pharyngeal wall, sometimes severely.

It is remarkable that the lungs are seldom injured in tonsillectomy, although the surgeon works at the entrance to the whole bronchial tree. In spite of great care a small amount of blood must be inhaled at every tonsillectomy, for X rays have shown traces of 'Lipiodol' at the lung base, when gauze swabs soaked in lipiodol have been used experimentally instead of the usual tonsil swabs.

The lung seems to be able to dispose of a small quantity of blood, and I know of no record in England of a lung abscess due to blood-clot. Rarely, inhalation of blood can cause pyrexia for ten days or a fortnight.

Hæmorrhage after Return of Consciousness and within Twenty-four Hours

Hæmorrhage within twenty-four hours after an operation is the terror of all who look after cases of tonsillectomy—surgeon, anæsthetist, and nurses alike. Within an hour a healthy patient may become desperately ill, unless he has urgent and expert treatment. Every surgeon has had a case where a disaster has occurred after hæmorrhage, and it is really to arouse thought about such a complication that this article has been written, for a case of tonsillar hæmorrhage is often allowed to be forgotten as quickly as possible, to spare the feelings of those responsible. The following case shows some of these difficulties:

A child of 8 was admitted for tonsillectomy. The operation was completed quite easily, but three hours later it was obvious that the tonsillar fossæ were bleeding. The house-surgeon set up a blood-transfusion apparatus and gave a pint and a half of blood. The bleeding continued, and two hours afterwards the child was sent to the theatre, but did not recover consciousness after the tonsillar fossæ had been tied.

The mistake in this case was clearly the decision to give a blood-transfusion rather than to tie the bleeding vessel at once.

A boy aged 12 had his tonsils and adenoids removed in the morning, and during the afternoon the house-surgeon was called because of bleeding. The house-surgeon was inexperienced and thought that he could tie the blood-vessel in the tonsillar fossa under local anæsthesia. He therefore sprayed the throat freely with a 10% solution of cocaine. Within half an hour the child died from cocaine poisoning, for the cocaine had been absorbed through the raw tonsillar fossæ.

The correct treatment for hæmorrhage within twenty-four hours is to tie the blood-vessel under general anæsthesia. The only exception is in the case of a well-disciplined adult who may allow local pressure of a swab if he has been given a small injection of morphine first.

A warning should be given against the use of sedatives in these cases, except in small doses. Patients who bleed after tonsillectomy seem to be unusually sensitive to morphine and the barbiturates, and I have records of two patients who died after tonsillectomy, when no cause could be found except a large dose of sedative given in each case for slight hæmorrhage.

If another operation is needed, the anæsthetist must be expert; there is a serious risk that blood will be vomited and inhaled during induction of anæsthesia, or that a blood-clot will become dislodged from the tonsillar fossa and obstruct the laryngeal orifice. I have witnessed both these disasters and the promptness with which my anæsthetist, Dr. F. H. Blackburn, handled them.

The detailed method of controlling recurrent hæmorrhage differs little from that already described for hæmorrhage during tonsillectomy, except that I have the practice of tying the pillars of the tonsillar fossa, besides tying the blood-vessel to make sure that the bleeding is controlled.

The bleeding may sometimes come from the nasopharynx. The cause may be a small piece of adenoid tissue which has been left behind, or a tear of the wall by the curette. If the bleeding has been serious enough to need a second anæsthesia, the blood-vessel should be sought for and tied, and a gauze pack left in the nasopharynx for twenty-four hours. The pack must be attached to a tape leading out of the mouth so that it can be removed.

Bleeding from the nasopharynx is fortunately rare.

Secondary Hæmorrhage

Hæmorrhage after the first twenty-four hours after operation is seldom serious, and only once in the last ten years have I had to tie a blood-vessel for this reason.

The cause of bleeding is usually the separation of the slough from the tonsillar fossa; since this may not take place for ten or twelve days, secondary hæmorrhage may be delayed for that length of time. The chance of hæmorrhage can be guessed by the amount of slough in the tonsillar fossa. If the slough is large, there is a greater risk of hæmorrhage; a clean tonsillar fossa is likely to give no trouble. The chance of secondary hæmorrhage controls the length of a patient's time in hospital; if he is sensible and knows what to do if there is bleeding, he can be discharged in three days, but our custom is to keep an adult in hospital for six days and a child for four days.

The treatment of secondary hæmorrhage is simple; it is to keep the patient in bed and to prescribe a sedative, such as morphine gr. $1/4$. The only indications for a second operation are a severe and repeated loss of blood and a steadily rising pulse-rate, both of which are rare. The prevention of secondary hæmorrhage lies in the prevention of slough in the tonsillar fossa, and a help towards this is strict cleanliness in the operating-theatre.

To complete the risks of tonsillectomy, it is only fair to report the sequence of events when a swab has been left behind. Every surgeon has his own method of avoiding this mistake, and each method is born of bitter experience, for few surgeons have not had to remove a swab on the day following operation. A swab can easily be left in the upper part of the tonsillar fossa, where it fortunately remains until it is removed. I know of only one case where it was inhaled and caused a lung abscess. I try to avoid leaving a swab by feeling both fossæ and the nasopharynx at the end of the operation, and then looking into both fossæ with the help of a headlight.

No doubt many of my colleagues will be able to add other examples of risks of tonsillectomy, but this list should be enough to act as a warning to those who think that such a common operation must in time become a minor operation.

SERUM-CHOLESTEROL LEVELS IN ELDERLY PEOPLE LIVING AT HOME

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IT has been suggested that the serum-cholesterol level is influenced by age, sex, diet, and metabolic state. Much of the evidence relating the serum-cholesterol level to the presence or absence of certain degenerative conditions, such as arteriosclerosis, is contradictory. For old people only scanty data are available. In the course of a detailed medical survey of old people living in their own homes the serum-cholesterol levels were determined and related to age, sex, diet, and various clinical conditions.

Methods

Selection of Group

The final group consisted of 98 men aged 66–85 and 141 women aged 61–87. The sample was drawn in March, 1948, and was a 1 : 30 random selection from the food-office register of men and women residing in Sheffield who had reached pensionable age (65 in men and 60 in women). Only those living alone or with spouse were included in the medical survey. Medical students (36 men and 34 women) aged 18–29 served as controls for the serum-cholesterol determinations.

Clinical Examination

The old people were medically examined in their homes. Samples of blood were taken by venepuncture ; the time of the day at which the blood was taken varied. Ophthalmological examinations were made at the Royal Hospital, Sheffield, by the staff of the ophthalmological department.

Nearly every person examined presented some evidence of clinical abnormality: raised blood-pressure, a story of angina, evidence of arteriosclerosis, spontaneous bruising, and chronic bronchitis were very common. It was decided, therefore, to exclude from the study only those cases in which there was evidence of disordered thyroid function (1 case) or glycosuria (3 cases).

As a criterion of obesity the thickness of a skin fold (the dermis with the underlying panniculus adiposus) was measured on the abdomen at the level of the umbilicus in the lateral plane. The skin fold was picked up with the thumb and forefinger and held in position while the thickness was measured with callipers, which were spring-loaded so that all the readings were made under constant pressure.

Radiological examination of the chest for evidence of aortic calcification was carried out at the Royal Hospital, Sheffield, by Dr. J. L. A. Grout.

Dietary Survey

Information was collected on the consumption of food and drink by each old person for a week. A spring balance and standard tablespoons and teaspoons were provided (Widdowson 1936, Beltram and Bransby 1950). The dietary survey was completed satisfactorily by 84 women (59%) and 71 men (72%).

Serum-cholesterol Determination

To 20 ml. of a mixture of acetone and absolute alcohol (equal parts by volume) 1 ml. of serum was added slowly with shaking, the total volume was made up to 25 ml. with the above mixture, and the flask was stoppered, shaken, and allowed to stand overnight. Next morning, after further shaking, the mixture was centrifuged. 5 ml. of the supernatant fluid was evaporated to dryness, the dry residue was redissolved in 5 ml. of chloroform, and the tube was stoppered and placed in a waterbath at 20°C for several minutes. 3 ml. of a fresh acetic-anhydride-sulphuric-acid mixture (10 : 1 by volume) was then added, the tube was restoppered, the contents were mixed, and the tube was placed in a waterbath at exactly 20°C in the dark for precisely 20 minutes. The optical density was then read photo-electrically with an Ilford no. 204 (Tricolour Red) filter. A standard solution of cholesterol in chloroform was taken through the later stages in parallel with each batch of tests.

The serum-cholesterol levels were also determined by the same method but using Bloor's original method of extraction (Bloor 1916). Others were determined by substituting for the acetone-absolute-alcohol mixture a mixture of ether and absolute alcohol (1 part to 3 parts by volume).

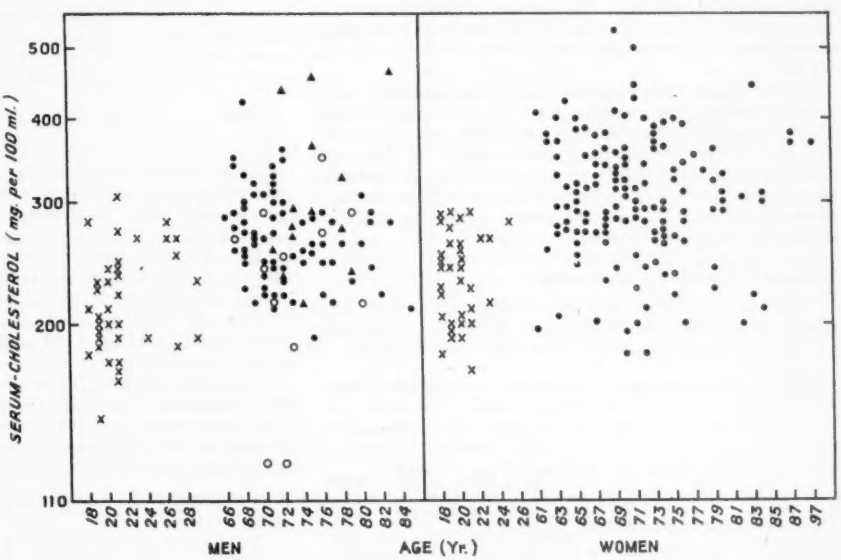

Fig. 1—Relation between age and serum-cholesterol level :
○ HEAVY DRINKERS ▲ TEETOTALLERS
× CONTROLS ● OTHERS

TABLE I—RELATION BETWEEN (LOGARITHMIC) MEAN SERUM-CHOLESTEROL LEVEL AND SEX

	Old people		Controls	
	Men	Women	Men	Women
No. of cases	98	141	36	34
Logarithmic mean serum-cholesterol level	2·4277	2·4915	2·3234	2·3680
Standard error of difference	0·0153		0·0174	
t	4·18		2·57	
P	Less than 1%		Between 1% and 2%	
Logarithmic mean serum-cholesterol level (mg. per 100 ml.)	268	310	211	233

Results

Methods

Comparisons were made between the three different methods of extraction by applying more than one method to the same serum. In studies of 53 sera no statistically significant differences were found between the results yielded by the different methods of extraction.

Age and Sex

The serum-cholesterol values for all the old people were plotted as a frequency distribution for each sex and were skew; plotted on semi-log paper they appeared to be lognormal. This was confirmed by the calculation of Fisher's g_1. The numbers in the control groups were insufficient to establish the type of distribution; we have assumed the distribution to be lognormal. There is evidence from the work of Wootton, King, and Smith (1951) that the distribution of whole-blood-cholesterol level in the age-group 18–50 follows a lognormal distribution. For these reasons the logarithms of the serum-cholesterol values have been used for all the calculations; in all the diagrams a logarithmic scale has been used for the serum-cholesterol values. The relation between cholesterol value and age for both the old people and the controls is shown in fig. 1.

There is a significant difference between sexes both in the old people and in the controls (table I), women having, on the average, a higher serum-cholesterol level than men of the same age. In both sexes there is a significantly higher serum-cholesterol level in the old people than in the controls (table II). The serum-cholesterol level is lower in subjects over the age of 70. Analysis of variance shows that the differences are not significant at the 5% level.

The subjects investigated may be regarded as a representative group of old people aged over 60, and the serum-cholesterol results provide limits for "normal" values. If the normal range be regarded as the mean of the logarithmic values plus or minus twice its standard deviation, the results reconverted into milligrammes of cholesterol per 100 ml. of serum yield the following values for people over 60:

Men: mean 268, range 176–409
Women: mean 310, range 200–481

Another method for the presentation of normal range has been suggested by Wootton et al. (1951). The outer or 1% limits enclose 98% of results and the inner or 10% limits enclose 80% of the results. They suggest that individual results falling outside the 10% limits should be viewed with suspicion, and results falling outside the 1% may be considered abnormal. These limits based on our results are shown in table III.

TABLE II—AGE DIFFERENCES IN SERUM-CHOLESTEROL LEVELS

	Men		Women	
	Controls	Aged	Controls	Aged
No. of cases	36	98	34	141
Logarithmic mean serum-cholesterol level	2·3234	2·4277	2·3680	2·4915
Standard error of difference	0·0173		0·0166	
t	6·02		7·45	
P	Less than ·1%		Less than ·1%	
Logarithmic mean serum-cholesterol level (mg. per 100 ml.)	211	268	253	310

Intake of Fat

In 64% of the cases studied an individual dietary survey was made. The mean daily intake of fat and the range of values in grammes for each sex were:

Men: mean 85·7, range 44·5–138·1
Women: mean 72·2, range 32·5–142·6

In the men there was no significant correlation between the intake of fat and the serum-cholesterol level (71 cases, $r = +0{\cdot}102$, P>10%), whereas in the women the significance of the correlation was between the 2% and 3% levels of probability (84 cases, $r = +0{\cdot}251$). Combination of the results for the two sexes gave a correlation coefficient which was statistically significant between the 1% and 2% levels of probability (155 cases, $r = +0{\cdot}184$).

Alcohol

Information was available about the consumption of alcohol by some of the men. The men were classified into 12 heavy drinkers, 14 lifelong teetotallers, and 72 others. To be eligible for classification as a heavy drinker a history of drinking five pints or more of beer daily throughout most of life was required. A comparison was made of the mean serum-cholesterol level in the 12 heavy drinkers (224 mg. per 100 ml.) with the level in the 14 teetotallers (305 mg. per ml.). The t-test showed that the difference was significant between the 1% and 2% levels of probability ($t = 2{\cdot}70$). The values for the heavy drinkers and the lifelong teetotallers are distinguished in fig. 1.

Obesity

The relation between the serum-cholesterol level and the body-weight was studied by means of a scatter diagram. There appeared to be an undue proportion of high serum-cholesterol levels in the heavier people, but the correlation coefficient between the serum-cholesterol levels and the body-weights was not statistically significant.

TABLE III—UPPER AND LOWER LIMITS OF SERUM-CHOLESTEROL LEVELS IN OLD PEOPLE

	Lower limits (mg. per 100 ml.)		Upper limits (mg. per 100 ml.)	
	1%	10%	10%	1%
Men	130	220	465	335
Women	185	230	495	395

Fig. 2 shows the thickness of the skin fold on the abdomen and the corresponding serum-cholesterol level in the older subjects. In the men there was no significant correlation between abdominal skin-fold thickness and serum-cholesterol level (93 cases, $r = +0{\cdot}1745$, 10%>P>9%); in the women the correlation was significant between the 1% and 2% levels of probability (132 cases, $r = +0{\cdot}2180$). When the correlation coefficients for the two sexes were combined, the resulting coefficient was significant between the 0·1% and 0·5% probability levels (225 cases, $r = +0{\cdot}1974$).

Manifestations of Conditions Possibly Associated with Atherosclerosis

25 men and 38 women gave a history suggesting angina of effort; 3 men had experienced attacks which were diagnosed as cerebral thrombosis; 9 men and 4 women gave a history of intermittent claudication; 16 men and 33 women were diagnosed, from anteroposterior and

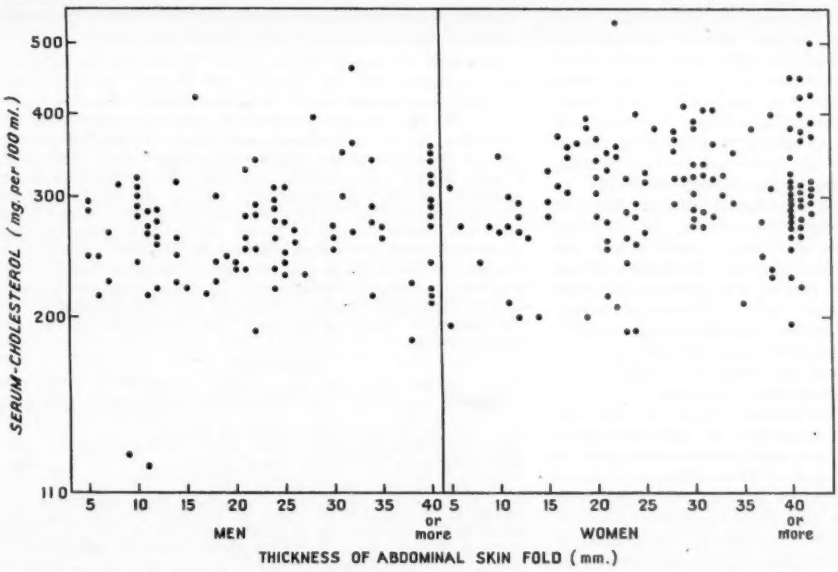

Fig. 1—Relation between obesity (measured by thickness of abdominal skin fold) and serum-cholesterol level in 93 old men and 132 old women.

lateral radiographs, as having calcification of the aorta; and 36 men and 37 women showed depressed crossings of the retinal blood-vessels. It was impossible to establish any statistically significant relation between the serum-cholesterol level and the presence or absence of any of these conditions.

Blood-pressure

Scatter diagrams showing the relation between the serum-cholesterol level and the systolic and diastolic blood-pressures did not show any correlation.

Eye Changes Associated with Ageing

In 175 of the subjects (78 men and 97 women) the eyes were examined: 31 men and 23 women showed well-marked arcus senilis; 2 men and 5 women had senile atrophy of the retina; and 19 men and 35 women had senile cataract. No significant relation was found between the serum-cholesterol level and the presence or absence of these conditions.

Discussion

The blood specimens were taken at various times of the day, irrespective of meals and rest periods. Ordinary meals are known to have little effect on the serum-cholesterol level. Keys et al. (1950) found no difference between the serum-cholesterol levels of specimens taken under basal and non-basal conditions, although Groen et al. (1951) found that infections, trauma, severe exercise, and emotional tension could affect the serum-cholesterol level.

Some modifications were introduced into the Bloor (1916) technique for determining serum-cholesterol levels. Extraction of the lipoids with a cold acetone-alcohol mixture overnight appeared to give results comparable to those given by extraction with an ether-alcohol mixture and with greater safety from fire and peroxide explosions. Sperry and Brand (1943) discussed the need for careful control of the temperature and of the time allowed for colour development in the Liebermann-Burchardt reaction. D.A. Podmore (personal communication) found that the greatest development of colour was obtained by using 55 parts of cholesterol solution in chloroform, 30 parts of acetic anhydride, and 3 parts of concentrated sulphuric acid. Free cholesterol gives less colour than does the equivalent amount of cholesterol in ester form, and the Liebermann-Burchardt reaction applied directly to an extract of serum gives higher results than those obtained if colour development took place after hydrolysis of the ester (Gardner and Williams 1921, Reinhold 1936, Sperry and Brand 1943, Kibrick et al. 1951). Keys et al. (1950) found this difference to be 2·1 mg. per 100 ml. but did not give full details of their technique. Reinhold (1936) and Podmore (personal communication) have shown that the difference depends on the conditions under which the colour is developed, the important factors being the temperature, the proportions of the reagents, and the time allowed for development of the colour.

The results show that the elderly women had a higher serum-cholesterol level than men of the same age. The finding of a higher serum-cholesterol level in the old people compared with the young people is in general agreement with the findings of Barker (1939), Kornerup (1950), and Keys et al. (1950) in men, and of Mühlbock and Kaufmann (1938) and Gram and Leverton (1949) in women. Sperry and Webb (1950) found that in 12 people (6 men and 6 women) the serum-cholesterol level had risen 15–30% after about fourteen years, and in 10 people (8 men and 2 women) the same interval of time had produced no significant change; the age ranges for these subjects at the end of the experiment were 38–57 for the men and 35–54 for the women. Page et al. (1935) studied the serum-cholesterol level of 67 men aged 21–101, and claimed that there was no significant change with increasing age; but the regression line for the data of Page and his colleagues between the ages of 21 and 79, calculated by Gertler et al. (1950), showed a rise of the serum-cholesterol with age which was significant on the 5% level. Barker (1939) suggested, and Keys et al. (1950) found, that with the onset of old age in men the serum-cholesterol level began to fall; the present study does not contradict such a finding in both men and women. If the higher serum-cholesterol levels were associated with lessened expectation of life after middle age, there would be a selective removal of those persons with the higher values, which would lead to a fall in the mean serum-cholesterol level in the older age-groups.

Hildreth et al. (1951) and Keys (1952) have shown that extreme variation in the intake of fat changes the serum-cholesterol level. Groen et al. (1951) have shown that variations in the cholesterol content of the diet between 1·5 mg. and 900 mg. per day can cause variations in the serum-cholesterol level. Gardner and Gainsborough (1928) found a similar effect. The range of dietary intake of fat was greater in the women than in the men, and this may explain the apparent correlation between the serum-cholesterol level and the intake of fat in the women but not in the men. We also found an over-all correlation when the two sexes were taken together. These results indicate that even the variations in intake of fat on normal diet may be sufficient to alter the serum-cholesterol level.

The finding of a relation between the intake of alcohol and the serum-cholesterol level is difficult to comment on. Wilens (1947c) expressed the opinion that the lower incidence of atherosclerosis observed in alcoholics compared with non-alcoholics was the result not of alcoholism but of associated differences in age, blood-pressure, and nutrition; to these might be added race and diet. Some of these factors may well be involved in the relation between alcoholism and the serum-cholesterol level.

There was no statistically significant relation between body-weight and serum-cholesterol level, but weight alone is not a true measure of obesity. Keys (1949) has found a better measurement in the thickness of an abdominal skin fold; his results indicated that fatter men tended to have higher serum-cholesterol levels. These differences analysed by the only statistical methods open to us were not significant, but possibly a more refined technique would have demonstrated a significant difference. The analysis of our data suggests that there is a relationship. Such a finding is of considerable interest because a high incidence of atherosclerotic complications in the obese is a well-known experience of life-assurance companies, and Wilens (1947a and b) found that severe atherosclerosis is ten times commoner in fat people than in thin. In experiments on animals Firstbrook (1951) found that the greater the degree of hypercholesterolæmia the more rapidly did atherosclerosis develop, and that the atheromatous condition developed more slowly in thin animals than in fat. There is strong evidence that in man also atheromatous conditions are commoner with a high serum-cholesterol level (Gubner and Ungeleider 1949, Duff and McMillan 1951, Katz 1952). We were unable to demonstrate any relation between the serum-cholesterol level and manifestations of atherosclerosis.

Our results did not show a significant association between the serum-cholesterol level and the blood-pressure.

No relation appeared to exist between the serum-cholesterol level and the presence or absence of arcus senilis or of senile cataract; the number of cases of senile atrophy of the retina was too small for any reliable conclusion to be drawn. Garn and Gertler (1950), in their survey of Aleutian islanders, found that the serum-cholesterol level was no higher in those with well-marked arcus senilis than in those without.

Summary

The mean serum-cholesterol levels in elderly men and women living at home were significantly higher than in control groups of younger people.

For both the young and the old the mean serum-cholesterol levels in the women were significantly higher than in the men.

The mean serum-cholesterol level tended to decrease after the age of 70.

The normal range for the serum-cholesterol level determined by the technique described was:

Men: aged 66–85: 176–409 mg. per 100 ml.
Women: aged 61–87: 200–481 mg. per 100 ml.

There was a significant correlation between the dietary intake of fat and the serum-cholesterol level in the women but not in the men. The combined results for the two sexes gave a significant correlation.

Lifelong teetotallers had, on the average, a significantly higher serum-cholesterol level than had heavy drinkers.

There was a significant correlation between the thickness of an abdominal skin fold and the serum-cholesterol level in the women but not in the men. The combined results for the two sexes gave a highly significant correlation.

No relation could be established between, on the one hand, the serum-cholesterol level and, on the other hand, intermittent claudication, angina, cerebral thrombosis, aortic calcification, depressed crossing of retinal blood-vessels, arcus senilis, senile atrophy of the retina, senile cataract, or the height of the blood-pressure.

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THE INSULIN MYTH

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THE outstanding importance of schizophrenia as a biological and social problem makes the critical evaluation of its treatment a matter of the first interest and no mere parochial concern for psychiatrists. In this paper I shall try to show that there is no sound basis for the general opinion (as stated, for example, in a refresher course by Sargant and Slater in 1951) that insulin-coma therapy counteracts the schizophrenic process in some specific manner, and that its therapeutic effects are greatly superior to those obtainable by electro-convulsive therapy (E.C.T.).

A treatment for schizophrenia may be evaluated by its immediate and remote effects on: (1) early cases, in which spontaneous remissions make the value of any therapeutic procedure formidably difficult to assess; (2) dilapidated chronic cases in which the extreme unlikelihood of spontaneous improvements makes even small groups of decidedly positive results significant; and (3) individual cases observed over long periods with repeated administration of the treatment.

The Early Case

It was soon recognised that useful results with insulin coma were unobtainable after two or three years of uninterrupted psychosis and the popularity of the

method depends entirely on its supposed value in recent cases. Usually, in the accounts of its application, a series of patients treated by insulin coma is compared either with a series treated in the pre-shock era or with a parallel untreated or E.C.T.-treated, series. These parallel series, though seldom comparable in more than a few respects, are often regarded as true controls. Moreover, where the series compared do include cases of longer standing, no distinction is made between those of continuous and those of intermittent psychosis. The whole method is riddled with sources of fallacy deriving from the nature of the disease, and from the nature of insulin treatment itself.

Fallacies Arising From the Nature of Early Schizophrenia

1. The diagnostic criteria are highly subjective and variable and certainly very different from what they were in the past, when recovery implied misdiagnosis. Bond and Braceland (1937) in a study of all patients admitted to a Philadelphia mental hospital in 1927–28 found that of 116 cases finally labelled schizophrenic after five years, only 10% had recovered and 31% had recovered or improved; but if the early diagnosis was accepted, the rates for schizophrenia rose to 20% recovered and 40% recovered or improved. Nowadays, insulin coma is often begun on a suspicion, perhaps bolstered by a Rorschach or other test; and almost all reports fail to specify the diagnostic determinants and their distribution. The increased readiness to diagnose schizophrenia in favourable cases is reflected in Malzberg's (1943b) finding that, in New York State, the incidence of schizophrenia and the discharge-rate are both rising.

2. Halliday (1946) has traced the profound changes in the quality and relative incidence of psychogenic illnesses over the past 70 years, and it is quite likely that the schizophrenic psychoses have been affected. Indeed, the great changes emphasised by him in the early environment of the infant, whose experiences are especially prominent in the psychopathology of schizophrenia, are particularly suggestive. As a result it may well be that the basic prognosis and diagnostic criteria have been altering in such a way as to invalidate the direct comparison of contemporary results with those of the pre-insulin era.

The immediate prognosis of present-day untreated early schizophrenia is altogether problematic, but the following summary of a series of 376 schizophrenic soldiers, 186 of whom I followed up by letter two years later, may suggest that acute schizophrenic illnesses are becoming more benign. Of the 376, 84% were discharged, nearly all within nine months, as recovered or improved sufficiently not to need further hospital care, and the follow-up indicated no strikingly extensive or rapid relapse-rate. For 156 cases treated with E.C.T., the corresponding figure was 83%, of 15 treated with insulin coma, with or without E.C.T., 9 resumed ordinary life, while for 205 untreated cases the figure was 88%. It should be added that in both treated groups a substantial number of psychoses subsided long after the treatment could have been responsible.

It is possible, therefore, that apart from the increasing detection of earlier and milder cases, the scales are being deceptively tipped in favour of insulin by some change in the short-term prognosis.

3. The influence of nuances of environment on the course of schizophrenia involves so many imponderables which cannot be isolated or controlled that to compare results at different times or places may be quite invalid. Quite apart from any theoretical arguments in favour of an organic pathogenesis or predisposition for schizophrenia, environmental factors have an overwhelming practical significance—as is shown by its changed incidence in European and African stocks transplanted to the United States of America (Malzberg 1940, Carothers 1947). The importance, for the outcome, of environment during treatment was stressed long ago, and can be seen in gross form by contrasting the dereliction of chronic schizophrenics in backward institutions with their appearance in hospitals promoting liberty and social life. Clearly it is impossible to control, and mistaken to disregard, the less obvious but equally influential variables affecting the response of the schizophrenic to treatment: the very same attendants will change in personality over the years, and the transitory junior nurse and doctor, the other patients, or even the weather, may all conceivably exert a decisive twist. Kalinowsky and Worthing (1943) obtained very different results with E.C.T. given in the same way at the same time to schizophrenics in two different hospitals.

Thus inherent in this disease and in the therapeutic environment, are numberless uncontrollable factors which, taken together, render it insurmountably difficult to validate any method of treatment by simple comparisons of results in early cases in different decades or places, or by different workers—unless possibly a near 100% recovery-rate were in question, which arises neither with insulin nor convulsion therapies.

Fallacies Arising from the Nature of the Therapy

1. Insulin coma produces drastic modifications in the subject's environment which may well favour improvement in a non-specific manner. Insulin patients tend to be an élite group sharing common perils and privileges, they receive an extra diet, are anxiously watched day and night, and have concentrated individual nursing for a five-hour daily treatment period over two or three months, as well as the attention of a doctor for three of these hours. In most mental hospitals they are given, at a conservative estimate, 50–100 times as much medical and nursing care, measured by the clock, as the general run of non-insulin-treated patients. A relevant observation by Rubé (1948) records a decline in remission-rate of schizophrenia with sulphosine therapy, in a Paris hospital, from 35–40% in 1932 to 15–20% in 1939 as the novelty of the method and the staff's initial enthusiasm wore off, and he suspects a similar development in insulin clinics as routine replaces drama. Cossa et al. (1948), recording just such a change, wonder naïvely whether their post-war insulin lacks some non-hypoglycæmic factor.

Few mental hospitals, even today, are able to offer recently admitted patients (let alone schizophrenics who have been in longer than a few months), much more than custodianship, rug-making, the cinema, and a chat every week or two with the doctor. Inducing two or three electric convulsions a week hardly alters this setting to an extent comparable with the insulin-coma régime—a fact to be remembered when assessing results.

2. The mode of selection of cases for insulin coma is biased. Reports are uniform that the best results are obtained where, without any treatment, the prognosis would be most favourable; so, except in the unusual circumstances of it being freely available for all, cases selected for treatment are only those considered most likely to benefit—that is to say, to get better anyway. It is no wonder that an "impression" is so often met that the quality of remission after insulin is superior. It would be surprising if it were otherwise. Practically all reports comparing insulin favourably with E.C.T. omit to say how patients were chosen for either treatment; but they contain details from which this bias can be strongly suspected.

3. The concomitant administration of E.C.T., so often reported, obscures even more the specific action, if any, of the insulin coma itself. Induced convulsions are, in fact, now so often casually mentioned as an ingredient of the coma technique that it cannot be assumed with certainty that recent publications on insulin may not just as well be taken to mean results with E.C.T.

4. Improvements in patients treated with insulin or E.C.T. cannot be attributed simply to the method unless they occur within some limited time; but most reports ignore this. Alexander (1944) believes the picture would be much less favourable if improvements appearing more than thirty days after treatment were excluded.

The Fallacies Avoided?

Altogether, the evaluation of insulin coma in early schizophrenia presents extraordinary difficulties deriving from both the nature of the disease and the nature of the treatment; and attempts to by-pass the pitfalls are few.

Lipschutz et al. (1939) designed an experiment to compare insulin with saline injections, both with and without "intensive resocialisation," to assess the relative importance of insulin, of coma, and of extra attention for the outcome. But as they treated fewer than 30 cases, only 5 of whom received saline, and only 7 of whom were denied "resocialisation," the positive conclusions reached do not seem justified.

Sillman and Terrence (1943) gave 112 schizophrenics daily nitrogen inhalations for one to three months to produce coma and extensor spasms, and some 20% remitted. They contrast this with 52% improvements in 62 of the "nitrogen failures" subsequently given insulin coma, E.C.T., or both; and deduce that the benefits of shock therapies cannot be explained by special attention, fear of death, anoxia, and so forth. They give no clinical details, no reason for only 62 of the failures receiving shock treatment, and no account of what became of the rest, so that it is not conclusive that the nitrogen and other results differ significantly.

Can all the difficulties be overcome? Penrose and Marr (1943), when assessing shock therapies in Ontario State hospitals, devised an ingenious method for eliminating variability in diagnosis, symptomatology, and estimation of improvement. They constructed tables (like life-assurance tables) to enable comparison of the number of treated patients remaining in hospital on any given date with the number to be expected without treatment, based on a control method by sex, age on first admission, and lapse of time since first admission; but not by diagnosis, since (as they illustrate) certain diagnoses predominate completely at particular age ranges. From this, they confirmed that over a period of two to three years, the shock treatments produced definite benefits in affective psychoses but almost none in 1041 patients diagnosed as schizophrenic; and in these, if there was any benefit at all, it was with convulsion therapy rather than insulin.

INSULIN COMA VERSUS E.C.T.

Being concerned here only to expose a myth, I shall not deal with E.C.T. technique in schizophrenia, except to mention that its casual administration without formulated principles is a waste of time.

Favourable accounts usually appeal for adequate dosage; and the course recommended, for instance, in a popular British textbook (Sargant and Slater 1947) is altogether insufficient. Danziger and Kindwall (1946) calculate statistically that 26 convulsions is the minimal course; whereas Kalinowsky and Worthing (1943)—when describing in 200 cases results as good as those quoted as the best obtainable with insulin by Kalinowsky and Hoch (1946) in their standard book—insist on 20. Their diminished success in another hospital for voluntary patients, and also the poorer prognosis of their less florid cases, show how easily simple comparisons may mislead. However, Hamilton and Wall (1948) report 100 such cases, 67% of whom were at home; 43% recovered between eighteen months and six years after E.C.T.; this result contrasts favourably with their experience of ten years before (though this contrast, as already explained, may have more than one interpretation). Strong evidence of the benefits of convulsion therapy is contained in Dedichen's (1946) statistical analysis of shock treatment in all Norwegian mental hospitals. The few insulin-treated cases briefly presented disclose incidentally that of 128 "pure" schizophrenics ill more than a year only 5 remitted.

Of the innumerable reports on insulin-coma therapy only some of the best known, careful, and typical need be considered here, since the vast majority are monotonously illustrative of the fallacies listed above. Those by Ross and Malzberg and others, appearing since 1939, on its use in the 19 New York State hospitals, have undoubtedly had most influence in promoting its claims. These cover 1039 insulin-treated, 1140 leptazol-convulsion-treated, and 1039 untreated controls; but the distribution of diagnostic and symptomatic data which might show the groups to be comparable are not given, and there is much internal evidence to suggest, in fact, that they are not comparable. Some improvement occurred in 65% of the insulin group (varying in different hospitals from 35 to 91%), but in only 26% of the controls; this, for an unselected sample, is remarkably low. Improvement was seen in only 35% of the leptazol group which again seems surprisingly low until a calculation from their tables reveals that only 15% of them had been ill for less than a year. Also the number of convulsions in each case is not given. There are some curious anomalies. Thus the control group's mortality (4%) was greater than that in the insulin series. The recovery rate (1·6%) in the leptazol series was under half that of the controls, and the "much improved" rate (9·9%) was also less—findings which show that the groups could not have been selected at random and were not prognostically similar. In fact, a later account by Malzberg (1943 a) of E.C.T. in the same hospitals gives results 3–4 times better than in the original convulsion-treated series. Also it is evident from the two-year follow-up report that some insulin-treated cases received leptazol—how many is not stated. Finally, a 1944 report on insulin from the same hospital group shows a 58% discharge-rate for untreated cases (Temporary Commission on State Hospital Problems 1944); which deprives the 26% improvement in the original controls of any meaning.

Danziger and Kindwall (1946) find that, per 100 admissions, the expectation of recovery in the "most favourable three months" is 1·5 for untreated schizophrenics, 34 for E.C.T.-treated, and 45 for insulin-treated, "regardless of duration of illness."

Before accepting the apparent superiority of insulin it may be noted that (though clinical details are not given) 78% of their 83 insulin patients had been ill for less than two years, compared with 63% of the 205 E.C.T. cases: thus there probably was some mode of selection, not specified, for either treatment. Secondly, E.C.T. was only given twice weekly, sometimes with interruptions; and petits-mals were counted as treatments. Again, they take their figures for the untreated category from discharge-rate tables for all U.S. State hospitals in 1933—a comparison which has every snare mentioned including different criteria of recovery, diagnosis, and length of illness on admission. Even these tables, however, indicate that at three years the discharge-rate has risen to 32·6%—which can stand quite respectably beside results three years after insulin treatment. At best, the results of these workers show a hastening of recovery; but they do not hesitate to ascribe this specifically to the insulin coma rather than to the non-specific treatment situation, since, they claim that treated patients had "no attention (except during actual treatment) not given to other patients . . . and not ordinarily given in public institutions. Psychotherapy was of the most casual and superficial type."

Insulin is strongly favoured by Linford Rees (1949) in a widely quoted British study. He compares insulin, E.C.T., and electronarcosis (E.N.) by the immediate outcome and follow-up of 208 courses of treatment in an "experimental population" of 160 schizophrenics. He assessed separately the 97 insulin, 72 E.C.T., and 39 E.N. courses, so several cases find a place in more than one group.

In a wide range of features the groups corresponded; but whether these were 160 consecutive schizophrenic admissions over a period, or whether they were somehow chosen from a larger population is not clear. In the absence of information about dosage, it may be surmised, from the poor results and

their similarity in cases with poor or good prognosis, that E.C.T. was inadequate by the standards quoted above. Also there are some odd numerical discrepancies. Thus in 18 patients all three treatments failed, accounting thus for 54 of the 208 courses, and leaving only 154 courses for the other 142 patients; so that 12 at most of these could have had two treatment courses. Yet is is stated that 21 recovered with insulin after failure with E.C.T. or E.N. When the percentages on which he bases his conclusions are reconverted into whole numbers, many of the conclusions seem doubtful. The relapse-rate after recovery is 7% with insulin in contrast to 33% with E.N.; but conviction melts when the E.N. recoveries are seen to number 3 in all. The percentages demonstrating the superiority of insulin in prognostically favourable cases refer to a mere dozen or less in each group.

Nielsen et al. (1942) described 316 schizophrenics each treated with 40 insulin comas and 10 convulsions, and arbitrarily selecting 100 of them by admission dates, they compared them with 100 controls similarly chosen from admissions between 1931 and 1937, matching in age and duration of illness. They found no evidence of benefit in the treated group.

LATE EFFECTS

Of the more remote effects of insulin, some background is provided by Blair's (1940) review of published work on the prognosis of schizophrenia. "An average of 40% of cases admitted to mental hospitals . . . recover or improve . . . relapses occur in about 20% of the cases discharged as recovered or improved of which approximately half are permanent."

In Ross and Malzberg's two-year follow-up, 45% still showed some improvement, 27% being recovered or much improved. Bond and Rivers (1942) report a recovered or "much improved" rate of 55% at the end of treatment, falling to 31% in three years. This three-year rate was still twice as high as the rate in 1937 at the same hospital; but even if the contrast were valid, the influence specifically of insulin would remain uncertain. Gralnick (1946) compares E.C.T. in 208 with insulin in 158 schizophrenics and finds in favour of insulin, though, like others, he fails to give details of method of selection for either treatment, ages, duration of illness in each group, clinical features, or relapse rates. In a survey (1945) of seven years' experience with insulin in 554 cases, he finds that half the total on parole are back in hospital between the fourth and sixth year, and after six years, 73% are back. He observes that the results bear no relation to the number or duration of comas and infers that it is the "insulin treatment situation" which matters. It is noteworthy that Freudenberg (1947), who gave E.C.T. where there was no response after 20 comas, goes on to insist on prolonged courses of "insulin" treatment for better results.

Rennie (1943) of Johns Hopkins considers that in a modern private institution, the results are little different with and without insulin. Similarly, Gottlieb and Huston (1943) found no significant difference at the end of four years in two groups of schizophrenics, 66 insulin-treated and 132 having only some psychotherapy. They state that the groups were clinically alike but do not mention random selection. Indeed this seems to be an endemic deficiency in insulin studies.

In a later contribution (1951), 128 cases having brief psychotherapy with defined aims are compared with 65 receiving 30 insulin comas and 143 having E.C.T.; the groups were similar but for a slight excess of catatonics having E.C.T. Over four years, no important differences in results were at any time discernible, and none emerged even when early cases of acute onset were studied separately.

Libertson (1941) relating experience since 1937 with insulin at one hospital compared 165 cases with a—prognostically—most unfavourable control group admitted simultaneously. He was astonished to discover no difference in results by 1941 and a close resemblance in 50 insulin and 41 controls with less than six months' illness.

Roberts (1942) compared 74 male patients, 46 of whom had convulsion as well as insulin-coma therapy, with untreated controls matched for age, duration, and diagnostic category, and observed no difference in outcome after two years, though transient improvements were 2·75 times commoner in the treated group.

Palmer et al. (1950) present a very discouraging survey of 393 schizophrenics at one hospital. Of 182 insulin-treated patients who had not previously received E.C.T. only 34% were discharged, while between eighteen months and six years later, only 20% were still out of hospital and only 6% really well. Of 185 who had not responded to E.C.T. only 17·8% were discharged; and of 100 patients who did not respond to insulin, 15% were discharged after E.C.T. Insulin courses were of 50 comas, and they had 2 deaths. The E.C.T. dosage is not stated.

In the light of the evidence so far presented, and apart from other considerations set out below, it is clear that the justification is slender indeed for the way in which money and staff are expended on clinics for insulin coma. Insulin offers the schizophrenic no long-term benefits; at best it hastens improvements that would occur anyhow with simple care in hospital, and which could be accelerated at least as well with E.C.T., and there is no evidence that this uncertain benefit is attributable to the insulin itself and not to the insulin-treatment situation. If the latter is the operative factor, its effects could surely be reproduced by some more rational and less hazardous means.

The Chronic Case

The extraordinarily few accounts of the use of insulin coma in long-standing schizophrenia all date from the early years of its use, when occasional cases of several years' duration also appear as failures scattered in other reports.

Rossman and Cline (1938) claimed that, of 52 cases ill an average of over four years, 83% improved, 40% being recovered or much improved, but this contradicts all subsequent opinion, and indeed, if reproducible, should have reduced the mental hospital population markedly. Barker (1939) treated 19 Negro men who had been ill for an average of seven years (but whether continuously or in hospital is not stated), and of 13 completing the course 4 were ill less than three years, 1 died, 3 improved, and 4 left hospital; he draws conclusions by converting these figures into percentages. Fröshaug and Thomstad (1938) treated 32 women with an average of eight years' psychosis. The single case with "full remission" was ill less than two years; 4 cases had "good remissions" but none could leave hospital and one certainly remained hallucinated, the effect being, chiefly, quieter and cleaner behaviour; 6 showed partial remission with even less benefit, and there were 16 instances of some transitory reductions of symptoms lasting a few days or weeks.

The general view is thus justified that insulin has no place in chronic schizophrenia; but there is ample evidence that E.C.T. can set off profound, if incomplete, restorative changes in this most stagnant of conditions.

Moore (1943) selected 37 chronic schizophrenics of an average nine years' standing, all severe behaviour and nursing problems, and gave them thrice-weekly E.C.T. for two to three weeks, followed by maintenance dosage: and in 26 there was "no question about the value of continuing the treatment"—they became sociable and employable, while appetite, sleep, and faulty habits were almost uniformly controlled. Shoor and Adams (1950) relate that during three months' intensive trial of E.C.T. in the most refractory female ward of a mental hospital, "the character of the ward . . . changed radically from that of a chronic disturbed ward to that of a quiet chronic ward," with a 90% reduction in sedation and restraint. Fergus (1952) gives an excellent account of what can be achieved with E.C.T. in chronic schizophrenia.

Clearly, the longer the psychosis endures unfluctuating over the years, and spontaneous recovery or chance improvements with treatment become less likely, the probability grows that E.C.T. counters the disease process in some specific way; while the therapeutic activity of insulin and its superiority to induced convulsions become still more clearly mythical. Yet, nowadays, when E.C.T. can bring about improvements that would have been astounding fifteen years ago in wards with schizophrenics

in their most chronic state, a widespread apathy exists about its possibilities in these and in recoverable cases.

The Individual Case

Perspective in the treatment of schizophrenia requires appreciation of its natural course in terms of long spans of time. It may occur as single or widely separated episodes without sequelæ, or as recurring episodes with residual damage, sometimes finally amounting to gross personality destruction, or it may never remit after the first manifestation. Often it is impossible to decide which of these developments is taking place and so, where some somatic interference is attempted therapeutically, repeated response acquires a significance that an isolated ensuing remission cannot have. It is often asserted that schizophrenics that have recovered after insulin coma should be treated again if they relapse, but anything beyond the scantiest experience to bear this out is not on record. With convulsion therapy on the other hand, relapse after withdrawal, and repeated improvement, are commonly seen in all phases. I hope in due course to publish studies showing that the schizophrenic patient may be as dependent on E.C.T. for a normal existence as a diabetic is on insulin.

Summary

Schizophrenia presents a major medical and social problem, and the widespread belief in the indispensable value of insulin treatment is a matter of general concern.

The difficulties of assessing any treatment in schizophrenia, and in particular, insulin coma, are discussed.

In face of these, the evidence for the value of insulin treatment is unconvincing. From the point of view, in turn, of the early case, the chronic case, and individual case studies, there is no proof of any specific therapeutic effect, and the long-term prognosis is in no way influenced.

Insulin certainly offers the schizophrenic no more benefit, and perhaps considerably less, than does E.C.T.

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PATENT VITELLO-INTESTINAL DUCT WITH ASSOCIATED FISTULA AND PROLAPSE

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IT has been estimated that congenital abnormalities of the vitello-intestinal duct occur in 1–2% of people (Brennemann 1948). A review of 144 cases in which the whole length of the persistent duct was patent showed that of the 132 cases in which the outcome was known 46 (35%) were fatal; of 30 cases complicated by prolapse of the small intestine through the umbilical fistula 26 (87%) were fatal; even in the cases without this grave complication the mortality was 20%; and the ratio of males to females was about 5 or 6 to 1 (Scalettar et al. 1952). Garrett (1918) reported the abnormality in homozygous female twins.

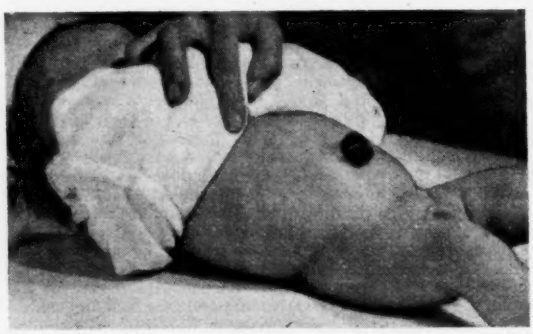

Fig. 1—Raspberry-like tumour at navel.

EMBRYOLOGY

In early embryonic life portions of the yolk-sac are included in the embryo to form three separate parts of the intestinal tract: foregut, mid-gut, and hind-gut. The connection between the mid-gut and the yolk-sac proper becomes constricted and drawn out to form the vitello-intestinal duct. At about the fifth month of fœtal life this duct is cut off from the mid-gut, but exceptionally it may remain patent as a constituent of the umbilical cord, or its proximal part may persist alone, in about 2% of people, as Meckel's diverticulum. When the duct is normally obliterated, that part of the artery that runs in the wall of the duct disappears also, but its proximal part persists as the superior mesenteric artery.

CASE-REPORT

In the following case, successfully treated by surgery, the vitello-intestinal duct persisted after birth with its lumen patent and its distal mucosa prolapsed, forming a "raspberry" tumour or enteroteratoma. The vitello-intestinal artery was represented by a fibrous cord.

A male infant was delivered at full term on Jan. 30, 1952. There was no history of maternal illness in early pregnancy, which was uncomplicated throughout. The baby weighed 7 lb. 1 oz. at birth and had a healthy brother aged 3 years. There was no history of congenital defect in any members of

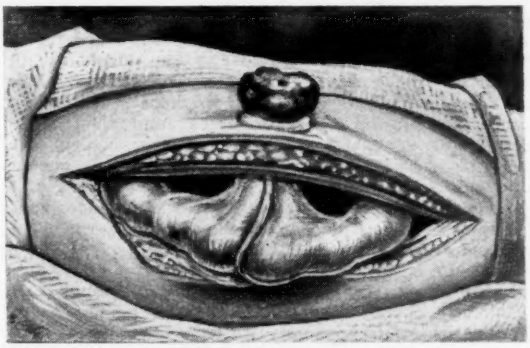

Fig. 2—Structures found at operation: patent vitello-intestinal duct and remains of vitelline artery.

the family. The neonatal period was unusual in that the umbilical cord did not separate until the fourteenth day, leaving a bright-red nodule which, in the next day or two, increased in size to nearly 1 in. in diameter. There was a little serous and mucous discharge from the surface of the mass, but meconium or fæces were never seen. There was no bowel or urinary disturbance. The baby was admitted to the pædiatric department of this hospital at the age of 18 days.

Examination.—His general condition was good. The umbilical area showed a red raspberry-like mass about $^{3}/_{4}$ in. in diameter (fig. 1). The size of this tumour varied from $^{1}/_{2}$ in. to nearly 2 in. in diameter, sometimes from day to day, according to the amount of prolapsed intestinal mucosa. A small dimple-like depression could be discerned in its centre, and a probe passed into it revealed a patent duct leading down into the gut. 'Lipiodol' 10 ml. injected into this dimple was shown radiographically to pass into the lower ileum and, twenty-four hours later, into the colon. A patent vitello-intestinal duct with raspberry tumour (enteroteratoma) was diagnosed.

Operation.—As, after a period of observation, there was no fæcal discharge or obstructive symptom and the child was thriving, it was decided to postpone operation. He was readmitted at the age of 6 months. The "tumour" was larger but, apart from this, he was healthy. The operation was done under ether and oxygen anæsthesia. The abdomen was entered through a right paramedian incision with its centre at the level of the umbilicus. A thin-walled track $^{1}/_{2}$ in. in diameter stretched from the umbilicus to the ileum $18^{1}/_{2}$ in. from the ileocæcal valve. To the right of this was a thin fibrous cord stretching from the umbilicus to the ileal mesentery close to its junction with the mesenteric border of the bowel (fig. 2). This cord, the remains of the vitelline artery, though lying in close apposition to the peritoneal surface of the patent duct, was nevertheless quite separate from it, and thus formed a highly dangerous potential cause of internal strangulation, because a loop of bowel could easily slip between the duct and the cord. It was excised together with the vitelline duct. The vitelline duct was divided about 1 cm. from the ileum and inverted with two layers of fine catgut without narrowing the bowel lumen. The remainder of the duct with the umbilicus was excised through a circum-umbilical incision. The vertical incision was closed in layers and the umbilical defect repaired with the fashioning of a new umbilicus (fig. 3).

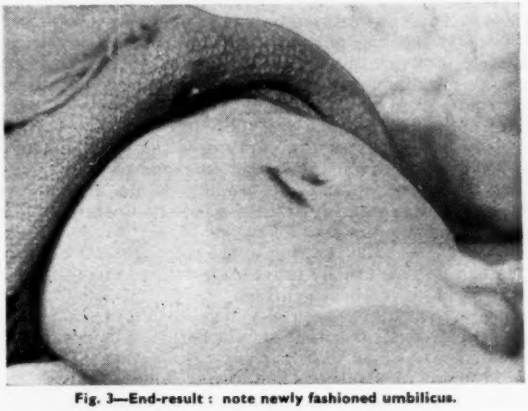

Fig. 3—End-result: note newly fashioned umbilicus.

Convalescence was uneventful, except for some pyrexia and mild infection of the umbilical wound. The baby took food normally within a few hours of the operation and showed no sign of peritonism or other untoward intra-abdominal disturbance, and on the second day after operation a normal motion was passed.

Follow-up.—The baby was brought for inspection a month after the operation and again three months afterwards. He is in excellent health and thriving.

Pathology.—The operation specimen consisted of a disc-shaped tumour $^{7}/_{8}$ in. in diameter and $^{3}/_{8}$ in. thick, connected to a stalk containing a central duct. On section the tumour and duct were found to be lined with mucosa forming villi covered with columnar epithelium and goblet cells, as seen in the small intestine. Gastric or colonic mucosa was not seen. At the side of the duct was a fibrous cord, probably the obliterated vitelline artery.

SUMMARY

A case of patent vitello-intestinal duct, complicated by prolapse of the intestinal mucosa through the umbilicus, is described.

The child's uneventful recovery after operation, suggests that it is best to leave such cases for six months or more before operating. Early interference is probably responsible for the high mortality-rate in recorded cases (87%).

The obliterated vitelline artery is a potential cause of strangulation, which may necessitate earlier operation.

Our thanks are due to Dr. G. Behr for his pathological report and the photographs, and to Dr. J. Grieve for the radiological reports.

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TRAUMATIC RUPTURE OF THE BILE-DUCTS

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RUPTURE of some part of the biliary tract is a rare complication of trauma to the right upper quadrant of the abdomen. Injury to the ducts is less common than to the gall-bladder: Rudberg (1921) described a case of injury to the common duct and collected 40 other examples of bile-duct injury. Lewis (1938), recounting a further case, could only find 6 additional ones since Rudberg's paper. Since then 2 more have been reported: complete rupture of the common duct (Lysaght 1939) and injury to the common duct associated with transection of the pyloric part of the stomach (Grimault 1947). Of 54 cases of benign extrahepatic biliary obstruction recently described by O'Malley et al. (1951) 46 followed some operation on the biliary tract, but not one was the result of non-surgical trauma.

CASE-REPORT

A farmer's son, aged 22 months, was admitted to Crewe and District Hospital on Feb. 24, 1952, having that morning been knocked down by a farm tractor, a wheel of which passed over his body. He had been unconscious for a short time, but this phase had quickly passed and he was less shocked than would have been expected. His face, neck, and upper chest were covered with the minute petechiæ of traumatic asphyxia, and there were conjunctival ecchymoses. These signs and slight

bruising over the back of the shoulders pointed to a crushing injury of the chest and neither symptoms nor signs suggested an intra-abdominal injury. Radiological examination of the chest, pelvis, and skull was negative, and the child at no time showed evidence of any pulmonary affection. His condition gradually improved, and by the ninth day the petechiæ had faded. Slight conjunctival icterus was then noted. On March 5, having been up for a day or two, he was allowed home.

That night he came crying into his parents' bedroom. It seems likely that he leaned against the side of his cot and fell out on to the floor. From that moment his condition changed for the worse, and on March 8 he was brought back to hospital ill, lethargic, and with a distended abdomen. Three days later he was jaundiced, his stools were pale, and there was evidence of free fluid in the abdomen. Six ounces of turbid bile-coloured fluid was obtained by paracentesis; this contained red blood-cells as well as bile pigments. The boy's condition was complicated by an attack of chickenpox. During the latter part of March paracentesis was done three times, 42 oz. being obtained on the last occasion. Intraperitoneal rupture of a bile-duct was diagnosed; the long interval before the occurrence of effusion suggested this rather than rupture of the gall-bladder.

Operation (April 4).—A subcostal incision allowed the escape of bile from the peritoneum. Separation of omental adhesions below the liver exposed a cavity whose walls were stained intensely green, as, to a lesser degree, were all the abdominal contents. Within this cavity bile was issuing from a minute orifice at the porta hepatis. A fine probe passed only 8 mm. up this sinus, and its exact relationship to the ducts could not be determined, but it was near the junction of the right and left hepatic ducts. The gall-bladder, cystic duct, and structures in front of the foramen of Winslow appeared normal. Dissection amidst the bile-soaked tissues around the orifice was impracticable. A short length of 'Polythene' tubing was stitched to the margin and implanted into a loop of jejunum, which was fixed to tissues round the porta hepatis. A side-to-side anastomosis between the limbs of the loop was made, and the abdomen was closed with drainage.

Recovery.—The child stood the operation well, and two days later he passed a normally coloured stool. There was little drainage from the abdomen, which, however, remained for some days rather distended. Subsequent improvement was rapid. A month later cholecystography showed the tube in place but no filling by the dye. Recent cholecystography shows similar appearances. In April, 1953, the boy was well and free from symptoms.

ÆTIOLOGY

Injury to the bile-ducts from external violence is always the result of a blow or crush in the region of the right costal margin. Usually this is the only injury, but sometimes there is associated visceral damage. Probably the direction of the force rather than its violence determines whether the ducts are injured; Lewis (1938) suggests that the force must be applied in a direction that will crush the ducts between the liver and vertebral bodies.

In most case-histories in which injury to the bile-ducts has been the sole lesion there has been shock of short duration, accompanied by pain in the region of the liver. The severity of these initial symptoms varies. After an interval, which may be only a day but is usually longer and may be up to a fortnight or even more, jaundice, clay-coloured stools, and bile in the urine are observed, and the abdomen becomes distended. This syndrome of jaundice with clay-coloured stools and rapidly increasing fluid in the peritoneum, which aspiration shows to be bile, is pathognomonic of injury to some part of the biliary tract. Exhaustion, fever, and loss of weight become apparent, and the patient may soon become critically ill. The extravasated bile may be shut off by adhesions, and a limited swelling in the region of the liver, sometimes described as cyst-like, may be detected. Sometimes the accumulation is limited to the lesser sac.

In the present case the original extravasation was presumably shut off and became localised to a small cavity in the greater sac below the liver. Subsequently, when the child fell from his cot eleven days after the accident, this ruptured, and escaping bile began to fill the general peritoneal cavity. A case described by Edington (1933) provides an interesting parallel. Pain and jaundice followed a blow in the hepatic region, but diminished during the third week, and the patient returned to work. On the twenty-fifth day, while boarding a tram, he strained himself; his symptoms recurred, and subsequent operation revealed an extension of a previously localised extravasation to a much wider area. There is an analogy here to the sequence of events in the delayed type of rupture of the spleen.

It would be expected that some cases would develop a stricture, and this sometimes happens, though less frequently than after surgical damage to the ducts. Perhaps the rent is usually small and involves only a portion of the lumen. A stricture of a hepatic duct provides a most difficult problem, and the possibility of this sequel should be an important consideration in deciding the appropriate operation in the early stages. Later it may be impossible to expose a strictured duct because of adhesions.

PROGNOSIS AND TREATMENT

The older records show a high case-mortality. Aspiration, often repeated many times, was the usual procedure. Every case described in the last thirty years has been treated surgically; in most cases bile has been evacuated and external drainage provided. I have found no record in which direct repair of a torn duct has been satisfactorily accomplished without subsequent stricture. Garré (1908) reported a case in which suture of a hepatic duct apparently succeeded, but a further operation was required a year later for cicatricial contracture at the site of anastomosis. In Lysaght's (1939) case complete rupture of the common bile-duct was associated with a rent in the duodenum, and retraction rendered repair impossible; he considered that ligation of the duct and cholecystogastrostomy would be simpler than implantation of the upper end into the stomach, duodenum, or jejunum; and this he successfully accomplished. Several cases have required more than one operation; one, comparable to mine, of a boy crushed by the wheel of a car, described by Waugh (1916), required three operations for drainage; in Edington's case, previously mentioned, thirty-three days after the first operation the biliary fistula was implanted into the stomach; and in other cases the development of a stricture has necessitated intervention after longer intervals.

It should be an important object of treatment to establish a flow of bile into the intestinal tract as soon as possible. Exhaustion and wasting are the inevitable result of continuing loss of all or most of the bile from the body. Patients with external biliary fistula improve when the bile is collected and returned to digestion through a Ryle's tube. Every effort should be made to ensure that one operation will suffice; subsequent intervention is likely to be difficult and, as in Lewis's (1938) case, adhesions may render it quite impossible to identify important structures. In rupture of the common duct ligation of the divided ends and anastomosis of the gall-bladder to the jejunum will usually be the most satisfactory operation. Injury to the hepatic ducts presents a more difficult problem. Damage is said to occur most frequently near the junction of the right and left hepatic ducts, but it has usually proved impossible to identify the individual ducts or the exact anatomical site of the rupture. All that is seen is a little opening from which bile trickles. An attempt should be made to provide a channel by which bile can flow into the intestine; anastomosis of the fistula to a loop of jejunum succeeded in the present case and appears to be a suitable method

to adopt in similar circumstances. If this is impossible, external drainage must be provided, with the intention at a later date of implanting the fistula into the alimentary tract.

SUMMARY

A case is described of traumatic rupture of the hepatic ducts in a child, treated by choledochojejunostomy.

The ætiology, clinical findings and surgical treatment are discussed.

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THE CLEVEDON POSITIVE-PRESSURE RESPIRATOR

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WHEN Lassen (1953) demonstrated in Copenhagen last year that positive-pressure respiration combined with tracheotomy could save life in certain types of poliomyelitis, it was obvious that treatment of this sort should be available in this country.

Lassen's original method required manual operation of the respirator and an almost indefinite supply of trained personnel. The advantages of an automatic type of positive-pressure apparatus was evident in Denmark, and Bang (1953) published details of such a machine. It is understood that automatic respirators have now been used in Denmark with varying success. In this country Pask (1953), Beaver (1953), and Russell and Schuster (1953) have developed similar equipment. In April of this year we acquired for this hospital a manual respirator such as was used in Denmark, and later added the Oxford inflator described by Macintosh (1953).

Since it seemed very difficult to provide sufficient personnel to operate manual respirators in any number, we constructed an automatic respirator similar to that described by Bang. Although Bang described the principles of the apparatus, the engineering details were not defined. With the financial approval of the South-Western Regional Hospital Board and the expert assistance of Mr. M. J. Willcocks, of Willcocks (Clevedon), Ltd., Instruments Section, a prototype was produced. Improved patterns were available by the middle of July, 1953. We now offer a preliminary report.

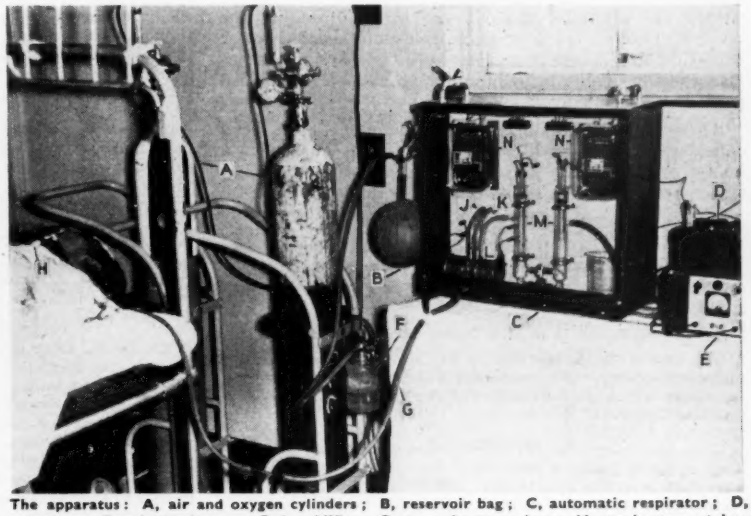
APPARATUS

The characteristics of the apparatus are evident in the accompanying figure. It consists of a slide-valve operated by electromagnets which in turn are actuated by electrolytic switches in a U-tube partly filled with acidified sodium-sulphate solution. The machine is powered by a 12V battery delivering 1 amp., maintained by a trickle charger. The Clevedon machine is similar to that designed by Bang, but the valve gear is original and electrolyte is used instead of floats in the U-tube.

Medical air (British Oxygen Co.), enriched with oxygen, is supplied from large cylinders through a humidifier to a reservoir bag (an ordinary football bladder) and so through the inlet valve of the machine to the patient in a circuit closed by the tracheal-tube cuff. The pulmonary pressure built up by the inspired air pushes the electrolyte fluid up to the second switch, which opens the expiratory valve, thus releasing expired air to the atmosphere. The electrolyte falls under gravity to reach the original switch and so opens the inspiratory valve for another cycle. The amount of air-oxygen mixture, the speed, the depth, and the inspiration/expiration ratio of respiration can all be controlled. The machine is of self-demand type and has an automatic safety valve. There is only one moving part, and the valve mechanism can be changed in less than 30 seconds without undoing any nuts or bolts. Relays are used to reduce the current passed by the electrolyte to about 30 mA, thus minimising electrolysis and sparking. The apparatus is relatively cheap (about £60), is portable, and can operate independently of a main electricity supply.

THE MACHINE IN USE

A well-developed man, aged 21, was admitted at 6.30 A.M. on Sept. 28, 1953, with severe poliomyelitis. At 7.30 A.M. he was placed in a Drinker-type tank respirator because of partial failure of his respiratory



The apparatus: A, air and oxygen cylinders; B, reservoir bag; C, automatic respirator; D, battery; E, trickle charger; F, humidifier; G, gas tube to patient; H, tracheotomy tube; J, gas inlet; K, gas exhaust; L, valve gear; M, electrolytic switches in U-tube; N, electrical relays.

muscles. During the day his paralysis spread, and by 6 P.M. the respiratory-muscle paralysis was almost complete. In addition he had developed bulbar involvement, with inability to swallow, and was accumulating pharyngeal mucus. Continued treatment in the tank respirator was obviously going to prove rapidly fatal, since it was impossible to keep the airway clear. It was decided to try the positive-pressure machine.

The patient was transferred to a bed, and respiration was maintained with the manually operated Oxford inflator through a face mask. Tracheotomy under local anæsthesia was performed by one of us (J. M.), a small window being cut in the trachea and a cuffed endotracheal tube inserted. This was connected to the automatic respirator and satisfactory breathing was established at once. Maximum comfort was obtained with a mixture of 4 litres of air and 2 litres of oxygen a minute at a respiratory rate of 12 breaths a minute. The inspiration pressure was 16–20 cm. H_2O. With this régime good air entry could be heard throughout all areas of both lung fields. The success of the respirator was best shown by the fact that the patient fell asleep for the first time in two days.

Nursing was carried out at a postural tilt of about 20°, head down. From the beginning there was completely adequate aeration of the lungs.

This automatic respirator has maintained the patient's life up to the time of writing, and minor adjustments only have been required. For long periods the respirator has worked without attention. The patient has been comfortable and cheerful and has had adequate sleep. Heavy sedation has not been required. Œsophageal tube-feeding was instituted on the second day. General nursing, postural treatment, and catheterisation were all easily achieved and found to be a welcome change from the performance of similar tasks in the tank respirator. The patient started to recover his ability to swallow on the sixth day, and œsophageal tube-feeding is no longer necessary. On the twelth day some spontaneous respiration recommenced, and now (Oct. 27) the patient is able to breathe himself for periods of an hour.

Secretions accumulate in the tube and suction of the tube has been necessary at intervals of two to six hours. It has only occasionally been necessary to suck out the main bronchi. The indications for suction seem to be simply the sound of râles in the tube audible at the bedside or conducted to the lung fields and heard through a stethoscope. There have been no signs of fluid accumulating in the smaller bronchi or alveoli. The endotracheal tube has been changed about daily.

Although the difficulties of management have been considerably less than anticipated, there has been a doctor present in the ward at all times, and we feel that this is essential for safe supervision.

SUMMARY

A positive-pressure respirator which has only one moving part and works independently of a main electricity supply is presented.

A case in which it is still being used is described.

Our sincere thanks are due to Mr. M. J. Willcocks and his many colleagues for the generous help and beautiful engineering technique which they have put at our disposal in producing this machine.

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Medical Societies

BRITISH ORTHOPÆDIC ASSOCIATION

THE association's annual meeting was held at Birmingham on Oct. 23 and 24. Sir REGINALD WATSON-JONES was in the chair on the first day; and on the second day he was succeeded by the new president, Prof. BRYAN MCFARLAND.

For the first time in the association's history an instructional course in orthopædic surgery was given on the day before the meeting. This course was attended by nearly two hundred young surgeons and senior orthopædic registrars, as well as by some of the fellows and members of the association.

Presidential Address

Sir REGINALD WATSON-JONES, the retiring president, said that the association had created strong ties between the orthopædic surgeons of Great Britain, the Commonwealth countries, and the U.S.A.; it had given strong support to the foundation of the New Zealand Orthopædic Association and the South African Orthopædic Association; and with equal generosity from the United States and Canada had secured the foundation of travelling fellowships for young orthopædic surgeons between the United States, Canada, and Britain, with a share by other countries of the Commonwealth.

The association, mindful of the value of tradition, had recently taken steps to stimulate interest in historical treasures relating to orthopædic and allied subjects. A collection of such treasures was to be housed at the Royal College of Surgeons of England, where a selection would always be on view in the college hall.

Acrylic Replacement in Fractures of Femur

Mr. DAVID LE VAY described his experiences with replacement arthroplasty of the hip by a prosthesis of the Judet type as the primary treatment of subcapital fractures of the neck of the femur. The method was well justified in the elderly. Most patients had been allowed up 4–5 weeks after the operation, and the average length of stay in hospital was 10 weeks. Although there had been a tendency for the head to migrate into a varus position a point of stability was reached beyond which no further displacement occurred. Insertion of the prosthesis to lie in slight valgus offered advantages.

Mr. O. J. VAUGHAN-JACKSON, who had done replacement arthroplasty in 34 cases, suggested that it was still too early finally to assess its merits. At best it did not give a normal joint, which was not true of a successful nailing operation; it could therefore not be recommended for all patients with femoral-neck fractures—certainly not for those in their fifties or sixties. Of his 34 cases, the operation was tolerated well in 32 and poorly in 1; 1 patient died. The main local complication was fracture of the prosthesis (4 cases); the use of metal prostheses in place of plastic would probably solve the problem of breakage. Walking was resumed 5–6 weeks after operation. Most patients preferred to use sticks for at least 6 months, but none complained of severe pain.

Mr. G. N. GOLDEN (Guildford) reported 60 cases of Judet arthroplasty for fracture which he had reviewed in collaboration with Mr. C. C. M. Murray (Southsea) and Mr. A. G. Ord (Portsmouth). The results were good in 70% and satisfactory in a further 15%.

The Valgus Foot

Mr. G. K. ROSE (Shrewsbury) said that the dividing-line between the normal and the "valgus" or "pronated" foot was ill-defined, and the indications for treatment indefinite. He had undertaken a long-term investigation of the feet of 177 children aged 6–8 years. His conclusions were that some valgus shift was normal, but that there was no difference in the valgus index between boys and girls. The significance of valgus shift was greatest when the axis of the knee was medial to that of the foot and least when the axis of the knee was lateral to that of the foot. The essential pathological feature in the abnormal valgus foot was strain of the peritalar joint, not simply an abnormal position of the joint.

Causes of Coccydynia

Mr. H. J. RICHARDS (Oswestry) reviewed the possible causes of coccydynia in the light of a study of 102 cases. A history of injury was present in less than half the cases. Infection and neoplasm were occasional causes; psychogenic factors were secondary rather than primary. He believed that in many cases coccydynia was caused by a central prolapse of one of the lower lumbar intervertebral discs. Of 1000 patients diagnosed as having a disc protrusion, 40 complained of coccydynia associated with sciatic pain; of the patients with coccydynia nearly half had initial low backache or sciatica, and most of the remainder later developed similar symptoms.

Mr. K. I. NISSEN expressed strong disagreement with Mr. Richards's hypothesis. In his experience relief from coccydynia could nearly always be assured by repeated manipulation of the coccyx: excision might be necessary in 5–10% of cases.

Fractures of Lateral Condyle of Humerus

Mr. J. N. WILSON (Cardiff) reviewed 57 fractures of the lateral condyle of the humerus in children. He recognised three types: (1) the flake fracture, in which a thin piece of bone was detached from the bony nucleus of the capitulum; (2) the type in which a large fragment was avulsed; and (3) the fracture with subluxation of the elbow-joint. The following complications were observed: limitation of movement (uncommon); deformity; ulnar neuritis; non-union (1 case); and loose body. In treatment, conservative methods were usually successful.

Professor MCFARLAND advocated a cautious attitude towards the immobilisation of injured elbows in plaster.

Treatment of Peripheral Arterial Disease

Prof. F. A. R. STAMMERS (Birmingham) said that the vascular conditions that might be benefited by sympathectomy could be classified under five headings: (1) those from spasm (impaired circulation after poliomyelitis, acrocyanosis frigida, Raynaud's disease); (2) those from such anatomical abnormalities as cervical rib; (3) those from disease of the arterial wall with superimposed spasm of various degree (Buerger's disease, endarteritis, medial sclerosis, atherosclerosis); (4) conditions caused by embolism; and (5) conditions caused by injury. In the treatment of peripheral circulatory impairment the first aim was to remove spasm and promote collateral circulation. Smoking should be absolutely prohibited (not just reduced), but alcohol was beneficial. Reflex vasodilatation by general body heating was a useful method of treatment. Buerger's exercises and antispasmodics were worth a trial. Operation should be considered when conservative measures were ineffective. In general, lumbar sympathectomy was more successful and more permanently effective than cervical sympathectomy. In the treatment of intermittent claudication severance of the tendo calcaneus was of use only in the elderly: it converted a painful hobble to a painless shuffle.

Muscle "Spasm" in Poliomyelitis

Mr. G. P. MITCHELL (Oxford) said that in his experience of the early stages of poliomyelitis, there was no true spasm except in the spinal muscles during the stage of meningeal irritation. In the limbs, limitation of passive movement was the consequence not of true spasm but of the resistance of muscles to stretch. The movements that were most restricted were those that caused traction on the main limb nerves, and if the liability to traction was increased by changes of posture—such as lateral flexion of the neck to the opposite side in cases of restricted elbow extension—the resistance to stretch was increased. Muscle resistance to stretch was simply a guarding action to prevent traction on the limb nerves.

Prof. J. TRUETA (Oxford) considered that these observations solved the hitherto baffling problems of so-called muscle spasm in poliomyelitis.

Congenital Dislocation of Hip

Mr. E. W. SOMERVILLE (Oxford) believed that in congenital dislocation of the hip the main factor responsible for the initial subluxation (which later progressed to complete dislocation) was anteversion of the femoral neck, in consequence of which the femoral head exerted pressure on the anterior part of the capsule when the limbs were extended after birth. (Pressure was minimal while the limbs remained flexed, so that dislocation before birth was unlikely.) If the capsule stretched under this pressure, the femoral head was extruded from the front of the joint and lay at first antero-superiorly on the ilium. There it was so placed that the trochanteric region, by pressing upon the fibrocartilaginous limbus of the acetabulum, turned it over into the joint, where it occupied the supero-posterior part of the cavity and formed the chief obstacle to complete reduction of the dislocation by manipulation. In every patient operated on he had found the limbus inverted as described, and he had produced an identical inversion of the limbus experimentally in a cadaver. His plan of treatment—which was still on trial and was not yet advocated for general use—was to remove the inverted limbus, thereby allowing complete reduction of the dislocation, and subsequently to do a rotation osteotomy of the femur to correct the anteversion and thereby prevent recurrence of the dislocation. The stage of unrestricted walking was reached within four months of the beginning of treatment. So far, the results were promising.

Mr. H. J. SEDDON could not readily accept the hypothesis that the limbus played such an important part. He preferred to rely on conservative treatment so far as possible; operation should be reserved for cases that were unsuitable for conservative treatment.

Mr. G. C. GORDON (Keswick) recalled that joints were formed at the 8th week of intra-uterine development. He showed radiographs of a congenitally dislocated hip in a fœtus at the 28th week of gestation.

Isoniazid in Skeletal Tuberculosis

Mr. A. G. QUINLAN (Oswestry) reviewed the results of isoniazid therapy continued for 6 months in 20 cases of skeletal tuberculosis. The drug distinctly improved the patient's general condition, but had no dramatic effect upon the tuberculous lesion.

Dr. F. HARWOOD STEVENSON (Stanmore) suggested that streptomycin, *p*-aminosalicylic acid (P.A.S.), and isoniazid should always be used together, to minimise the development of bacterial resistance.

Mr. M. B. DEVAS reported that 10 patients with skeletal tuberculosis who had received a combination of streptomycin, P.A.S., and isoniazid for 6 months all tolerated the drugs well, and in all cases the lesion was quiescent a year later.

Foot Supports

Mr. NORMAN CAPENER (Exeter) said that the association's subcommittee formed to study surgical appliances and splints was anxious about the promiscuous dispensing of foot supports "over the counter." When these were required for feet that were structurally abnormal, they should be made individually from plaster casts of the feet. When the feet were structurally within normal limits, he doubted the wisdom of prescribing foot supports at all.

Scoliosis

Mr. F. G. ALLAN (Birmingham) described a new method of correcting scoliotic curves. In principle, the method consisted in the use of an extensible jack operated by a screw mechanism. Each end of the jack was designed to fit into the side of a vertebral body at its junction with the transverse process. The jack was so placed that it bridged the primary curve on its concave side. When in position it was extended by screwing the centre-piece with a tommy-bar, thereby reducing the curve. Later a segment of the spine was fused by bone grafts. The method had the advantages that no plaster fixation was needed before or after operation, and that the time occupied by treatment was much reduced compared with correction by hinged plaster-jackets. Moreover it had been possible to correct curves that looked incorrectible by ordinary methods. The operation had proved easiest in cases of lumbar and thoracolumbar curves. It was relatively difficult in thoracic deformity, but the only complication of note had been pneumothorax from perforation of the pleura.

Mr. H. OSMOND-CLARKE welcomed the report as a likely step towards the solution of the problem of scoliosis, especially in younger children in whom the recognised methods of treatment were notoriously unreliable.

Primary Dislocation of Patella

Mr. J. S. ELLIS (Southampton) believed that primary lateral dislocation of the patella was commoner than was generally realised. It might explain some cases in which full function was restored after excision of a normal cartilage when the symptoms had been attributed erroneously to a torn cartilage. Only occasionally did the dislocation persist; usually spontaneous reduction occurred, and the diagnosis was then difficult. The history might be like that of a case of torn medial cartilage; but there was hæmarthrosis (unusual with torn cartilage), and the tenderness, although on the medial

side, was not localised to the level of the joint line. A diagnostic sign was the pain produced by attempts to push the patella laterally. At operation a rent in the capsule medial to the patella was to be expected. When the condition was recognised soon after the injury operative repair, with pleating of the medial part of the capsule, should be considered.

Dorsal Adduction Deformities of Fifth Toe

Mr. W. H. SCRASE (Birmingham) said that, in the treatment of dorsal adduction deformities of the fifth toe, manipulation and splintage were time-consuming and seldom gave more than temporary benefit. Amputation was often unacceptable to the patient, and it might predispose to tenderness over the fifth metatarsal head. The technique described by Lapidus, which combined capsulotomy with transfer of the long extensor tendon to the plantar aspect of the phalanx, seemed attractive but he had little experience of it. The method of skin advancement by V-Y-plasty was said to be successful, but he had seen cases in which the deformity had recurred. The operation that he had used was "syndactilisation" of the fifth to the fourth toe. The extensor tendon was divided and the base of the proximal phalanx of the fifth toe was excised; the adjacent surfaces of the fourth and fifth toes were united after excision of a fillet of skin. The results were good in 39 and fair in 3 of the 42 toes operated on.

Mr. J. N. WILSON (Cardiff) defended the operation of skin advancement by V-Y-plasty. Professor MCFARLAND claimed a long experience of the "syndactilisation" operation, which he had found satisfactory.

Paralytic Dislocation of Hip

Mr. G. BLUNDELL JONES (Exeter) described 12 cases of paralytic dislocation of the hip, in 7 of which this was bilateral. The causes were spastic hemiplegia or paraplegia, poliomyelitis, and meningomyelocele. In all of these patients the onset had been before the age of 2 years. Mr. Blundell Jones believed that the factor mainly responsible for the dislocation was an abnormal valgus position of the neck of the femur, which was often almost in line with the shaft. Adductor contracture was a contributory cause. After dislocation the acetabulum gradually became more shallow, but it retained useful depth for several years. In the early stages the dislocation could be reduced by simple traction and abduction of the limb, but it was likely to recur. Later, secondary contractures prevented reduction. When the dislocation was reducible the hip had been made stable by wedge osteotomy at the base of the neck with restoration of the neck-shaft angle to 120°. The fragments had usually been fixed after osteotomy by a small nail-plate.

Mr. LE VAY preferred to treat dislocations of this type by a shelf operation, which obviated shortening, preserved the efficiency of the abductor muscles, and did not endanger the blood-supply of the femoral head. But Mr. BLUNDELL JONES did not accept these arguments. He had found the wedge osteotomy an easy operation, whereas it was difficult to construct a satisfactory shelf in the correct position. He had not found that osteotomy at the base of the neck endangered the blood-supply of the femoral head.

Reviews of Books

The Gold-Headed Cane

7th ed. WILLIAM MACMICHAEL, M.D. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1953. Pp. 222. 47*s.* 6*d.*

THIS is an American reprint of the fifth edition which was published in 1923. The choice of edition is wise, for George Peachey's introduction and biographical notes enrich William Macmichael's text.

Macmichael was registrar at the Royal College of Physicians of London when Matthew Baillie's widow presented the cane, a short time before the opening of the present building in 1825. The book takes the form of an autobiography of the cane, which was owned successively by John Radcliffe, Richard Mead, Anthony Askew, William and David Pitcairn, and Matthew Baillie. The cane moved in the highest medical circles for a period of 130 years—from a few months after the accession of William and Mary to the middle of the reign of George IV—and it records engagingly the changing pageant of medical practice, besides giving interesting accounts of the foundation and history of the Royal College of Physicians and of the Royal Society.

Somewhat oddly, in this reprint the picture of the original cane has been replaced by a plate of a gold-headed cane of different pattern presented to the outstanding medical student of the year at the University of California. But we must be grateful to Prof. W. J. Kerr, the new editor, for bringing a delightful book to the notice of a new generation of medical men and students.

Pathology in Surgery

EDWIN F. HIRSCH, PH.D., M.D., director of the Henry Baird Favill Laboratory and pathologist of St. Luke's Hospital, Chicago, Ill. Baltimore: Williams & Wilkins. London: Baillière, Tindall, & Cox. 1953. Pp. 647. 76*s.* 6*d.*

Dr. Hirsch's book is essentially pictorial for the text is concise and at times rather too elementary. It could be used with advantage by senior students on those occasions when speedy revision of the subject of surgical pathology is unavoidable. There are references at the end of each chapter, but they are few and hardly representative. The eight coloured pictures are very good and the photomicrographs clear and helpful. The reproductions of the gross specimens, however, are occasionally disappointing, though great care has been taken in the selection of material.

Dr. Hirsch has made good use of his own experience, and students will be grateful to him for drawing attention to possible pitfalls which await the unwary—as for, instance, that endometriosis is liable to be mistaken for carcinoma of the rectum, and a syphilitic lesion of the cervix uteri for carcinoma.

Lewin's Field Theory in Social Science (London: Tavistock Publications. 1952. Pp. 346. 21*s.*).—It is still too early to assess the value of Kurt Lewin's contribution to social theory. His stimulating personality, his experimental flair, his challenge to the Freudian use of a historical approach to psychological dynamics, and the devotion of his pupils, made him a prominent figure in American psychology. Of his writings available in English most have reported work that he and his pupils did while he was still in Germany. The present volume, edited by Dorwin Cartwright, shows how productive were his years in the United States, not only in tackling practical problems (such as an earlier collection, *Resolving Social Conflicts*, described more fully) but also in developing his theoretical position. Papers on the philosophy of science, written between 1940 and 1943, are followed by studies in learning, regression, social experiment, and group dynamics; the general outcome of his researches is presented in the final chapter. Lewin's style in writing was dry, giving no hint of the attractiveness of his personal exposition of a problem. But the straightforward account of his views set out in this collection makes it plain that during the last seven years of his life he was an original and fertile influence on the development of social psychology.

Diseases of Children (5th ed. London: Edward Arnold. 1953. Pp. 1973. £7).—In the six years that have passed since the last edition, much has happened that calls for notice in the revision of this splendid textbook, now edited by Prof. Alan Moncrieff and Dr. Philip Evans. The sections that have been entirely rewritten include those on the causes of congenital malformations, on growth and development, on drug treatment, on kwashiorkor, on endocrine disorders, on diseases of the teeth and jaws, on the alimentary canal, on congenital heart-disease, and on infant feeding. As before, the book is in two volumes, but the page numbers now run on and there is only one index.

Textbook of Medical Treatment (6th ed. Edinburgh and London: E. & S. Livingstone. 1953. Pp. 1021. 50*s.*).—Reviewers have spoken so highly in the past of one of the most popular of textbooks that there is really no more to add to the observation that it is living up to its reputation. But we should perhaps note that the complete revision that has lately been made has introduced new chapters on chemotherapy, rehabilitation, the treatment of poisoning, and the chemotherapy of malignant disease; and the book has been reindexed to make the reader's way even smoother. The editorial team is unchanged—Prof. D. M. Dunlop, Prof. L. S. P. Davidson, and Sir John McNee.

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THE LANCET
LONDON: SATURDAY, NOV. 7, 1953

Winter Admissions to Hospital

EACH winter hospitals up and down the country tackle the recurring problem of finding beds for many extra patients. Most of these have acute respiratory disease or heart-failure precipitated by bronchitis; and sometimes their numbers are swollen by an influenza epidemic or other episode, such as last year's catastrophic fog.[1] The burden has usually fallen mainly on the regional-board hospitals—in other words, the former local-authority and smaller voluntary hospitals—which perforce have had to restrict surgical admissions; whereas in the teaching centres the impact of this additional work was hardly felt at all. In 1951, however, the Emergency Bed Service introduced for the London area a new warning system [2] for reducing, in times of stress, the number of non-urgent admissions; and in this the teaching hospitals have participated to a varying extent. This system depends on the proportion of patients, referred by practitioners, for whom admission is secured. In the summer the E.B.S. normally secures admission for about 90% of cases, the remaining 10% of applications being withdrawn for one reason or another.

A *white* warning, issued when the admission-rate falls to 85%, is intended as a preliminary alert.

A *yellow* warning goes out with a fall in the admission-rate to 80%; and on its receipt various steps may be taken to increase the number of available beds—including, for example, the prohibition of closure of wards for cleaning, a percentage reduction in "cold" surgery, and reduction of admissions for investigation.

On receipt of a *red* warning, which goes out when the admission-rate falls to 75%, these measures are intensified.

Last winter, in its first real test, this system proved its worth; but some modifications have been necessary,[3] since warnings tended to be issued too late and taken off too soon. There were two reasons for this defect. Firstly, as pressure on the service mounted, an increasing proportion of cases were admitted by the "medical referee" procedure—which had the effect of keeping up the admission-rate but of delaying the issue of warnings until the situation had become serious. Secondly, the response of hospitals to the yellow and red warnings caused a sharp rise in the admission-rate, and thus the warning might have to be cancelled even though applications were still increasing. Henceforth, for the purpose of warnings, cases admitted through the medical referee will not be included; and warnings will not be cancelled until the "voluntary-admission rate" (i.e., excluding those arranged through the medical referee) has risen to 1% above the rate at which it was imposed and applications have fallen to the level at which they stood when the warning was issued. Furthermore a white warning will be issued at the request of the Ministry of Health when it has evidence of an imminent emergency, such as an influenza epidemic.

Possibly a better index of shortage could be obtained from a group of regional-board hospitals than from the E.B.S. figures. Refusal of E.B.S. cases is not necessarily a reliable index of bed occupancy. Each regional-board hospital receives from its own area many of the less "popular" cases, including illness in the elderly and abortions; and if it opens its doors to similar cases from other parts of London it will soon have no room left for its other local commitments. Thus refusal of E.B.S. cases may not always be related to the immediate bed state.

In the past many hospitals have not appreciated the need for radical rearrangement to deal with winter epidemics. Flexibility in the distribution of beds between surgeons and physicians is essential; and yet this distribution has remained remarkably rigid, perhaps partly because of considerations of departmental prestige or the seniority of the various members of the medical staff. Additional medical beds are an imperative need in the winter, and this seasonal addition could be offset by an excess of surgical beds in the summer months. A further difficulty is that of ensuring a proper balance between the claims of semi-urgent admissions and those of patients on the waiting-list. Some restriction of admissions from the waiting-list is inevitable; but patients whose condition is steadily deteriorating should not have their admission deferred for weeks on end, as happened in some hospitals last winter. To stop all admissions from the waiting-list is not justifiable, except for very brief periods. It is invaluable to have a fairly senior member of the medical staff charged with the task of striking a balance between elective and emergency admissions. Extra beds are no solution. In a winter epidemic, casualties among the nurses are often numerous; and overloading a hard-pressed staff simply slows the turnover. The most promising course is, not to increase the number of beds, but to increase turnover by discharging patients more promptly. This involves either securing closer liaison with general practitioners, as has been done at Cambridge,[4] or else making fuller use of convalescent homes. It is unfortunate that at present a convalescent home cannot be related to a particular hospital, for this would greatly aid the early transfer of patients. In London much closer coördination is needed, too, between outlying hospitals and those in the central area; last winter beds in peripheral hospitals were sometimes empty at a time when central hospitals had more to do than they could manage. The task of admissions officers would be made much less difficult by partial restoration of the arrangement whereby local-authority hospitals were responsible for emergencies from a given district. It would be wrong, however, to insist that all emergencies should be geographically distributed; and indeed a greater number of acute cases could with advantage be admitted to the central London teaching hospitals. (The regional medical admissions officer attached to the E.B.S. represents only the four Metropolitan regional boards and has no authority to secure admissions to the teaching hospitals.) It is particularly

1. See Abercrombie, G. F. *Lancet*, 1953, i, 234.
2. See *Ibid*, 1951, ii, 439.
3. *Ibid*, Oct. 31, 1953, p. 934.
4. *Ibid*, 1951, i, 783.

important that responsibility should be firmly imposed and accepted for the less " popular " group of cases.

Now is the moment for every medical staff committee to review its arrangements in the light of last winter's experience, and to see that the hospital's resources are equated as closely as possible with the fluctuating needs of the population it serves.

The Lethal Aerosol

WHILE public bodies debate the type of masks to be worn, and fashion designers plan fancy little yashmaks, the urgent question arises: Can any sort of face covering, likely to be worn by the public, provide significant protection against the hazards of fog inhalation? To answer this we need to know what the toxic agent is, how it is carried, and where it lodges in the respiratory tract. There are several sources of information to which we can turn.[1–8] Elaborate studies have been made in Los Angeles of the smoke-fog (the original " smog ") so prevalent there[2]; but this is rather different from our own polluted fogs, since it consists of smaller particles often in relatively dry air (25–30% relative humidity), the most noticeable effect of which is eye irritation. Secondly, there is the Meuse disaster of 1930, when intense cold joined with fog and heavy pollution to produce a suffocative bronchitis, which killed 64 people.[3] Investigators attributed the disaster to sulphur dioxide and its oxidation products in the air, and remarked that inflammatory changes in the lungs were slight and that adrenaline injections gave some relief. Thirdly, at Donora, Pennsylvania, in 1948, there was again cold, fog, and serious pollution, leading to the death of many asthmatic or cardiac patients.[4] Here it has been suggested that the deaths, which could not be ascribed to any single pollutant, were due to synergism between all the various contaminants. It was noted, too, that the death-rate fell before the pollution began to lessen. Fourthly comes London's experience last winter, when cold, fog, and an increase of sulphur dioxide and smoke in the air coincided, producing an enormous rise in mortality, particularly of elderly chronic bronchitics.[5 6] RUSSELL'S[7] careful statistical analyses of earlier London fogs had established a correlation between cold and fogginess on the one hand, and respiratory mortality on the other; and cold appeared to be the more important of the two factors. All these accounts explain the general conditions that are likely to kill our bronchitics in winter-time, but they hardly supply the information necessary for effective preventive measures. Until our fog has been properly analysed for particle distribution and constitution, we must proceed by intelligent guesswork.

Fog consists mainly of watery droplets, 5–50 μ in diameter.[1] Probably in such saturated air most of the enormous range of different kinds of nuclei (dusts, smokes, pollens, &c.) normally carried in the air will have become centres of condensation; thus we shall be dealing principally with a gaseous phase in which watery droplets are suspended. Secondly, if there is any water-soluble gaseous contaminant, such as sulphur dioxide, this will tend to dissolve in the droplets, so that the droplets will contain within them the bulk of the water-soluble material in the air. This may be of fundamental importance. Sulphur dioxide dispersed as one part per million throughout a gaseous phase might be relatively safe; but dissolved in droplets giving a local concentration thousands of times greater, it will produce a strongly acid respiratory rain, which may readily produce bronchial spasm and œdema. Already, in fact, there are indications that, for the same total sulphur-dioxide content, a sulphur-dioxide aerosol is more dangerous than the gas[9]; and no doubt this would also be true of other pollutants. Thirdly, droplets of this size will largely be retained in the respiratory tract—the largest in the nose, the smaller ones reaching the bronchioles. Particles much smaller than this will tend to escape.[10] We may therefore take it, as a working hypothesis, that the danger of these polluted fogs is due to inhalation in unusually cold inspired air of small droplets containing water-soluble pollutants in concentrated form, of such a size as to be retained in the respiratory tract and able to penetrate at least as far as the bronchi and bronchioles.

Fortunately fog droplets are relatively large compared to bacteria and smokes. A gauze mask or a woollen scarf could be expected to exclude a reasonable proportion—perhaps a half to three-quarters—of the particles, which might be enough to bring the pollution of inhaled air below the margin of danger. Complete purification is obviously too much to hope for. The more layers of gauze used, the more efficient the mask will be; but a balance will have to be struck between efficiency and resistance to breathing. The scarf or mask will serve a second purpose, warming and humidifying the incoming air. Indeed, as the mask becomes sodden with expired condensation it may also come to serve as a watery " scrubber " of the gaseous phase, although at the same time its resistance will rise. A gauze mask or, possibly better, a thick woollen scarf wrapped round the face, by excluding droplets and by warming and scrubbing the inhaled air, may, so far as can be judged, really prove useful. The only obvious danger seems to be too great a respiratory resistance in a patient already breathing with difficulty. Possibly, considering RUSSELL'S analysis, warming the air is as important as filtering it. A bronchitic's room should obviously be well heated, even if he cannot wear a mask; and, as CROWDEN points out,[11] the method of heating should not entail sucking in more fog from outside; electric radiators are particularly suitable.

This discussion of therapeutic (as against preventive) measures can only be tentative, so long as the exact constitution of the fog and its lethal principle remain unknown. There exists a rich store of experience from industrial and military research in making smokes and aerosols and in devising protection against them. This experience should now be mobilised against an enemy long unchallenged.

1. Air Pollution. Edited by L. C. McCABE. New York, 1952.
2. Second and third Interim Reports of the Stanford Research Institute, 1949, 1950.
3. *Lancet*, 1931, i, 302.
4. Schrenk, H. H., Heimann, H., Clayton, G. D., Gafafer, W. M., Wexler, H. Air Pollution in Donora, Pa.: Epidemiology of the Unusual Smog Episode of October, 1948. Washington, 1949.
5. Logan, W. P. D. *Lancet*, 1953, i, 336.
6. Scott, J. A. *Ibid*, p. 288.
7. Russell, W. T. *Ibid*, 1924, ii, 335; *Ibid*, 1926, ii, 1128.
8. Amdur, M. O., Melin, W. W. jun., Drinker, P. *Ibid*, Oct. 10, 1953, p. 758.
9. See *Ibid*, p. 765.
10. van Wijk, A. M., Patterson, H. S. *J. industr. Hyg.* 1940, **22**, 31.
11. Crowden, G. P. *Brit. med. J.* Aug. 22, 1953, p. 440.

Dextran

REPORTS on the clinical use of dextran have shown that the risk of reactions after its infusion is slight. Most of the reported reactions have been febrile; urticarial or allergic reactions have been few. When, however, dextran is injected into healthy people, the story is rather different. As was first observed in America, nearly 50% of healthy recipients may show reactions of one kind or another, and the incidence seems to be related to the type of dextran used. On an earlier page Mr. WILKINSON and Dr. STOREY describe the results of infusing 500–1000 ml. of a solution of closely fractionated dextran into 5 normal volunteers with normal blood volumes. All 5 showed reactions, which can be roughly divided into two phases. The first, which developed during or soon after the infusion and lasted up to two hours, was predominantly urticarial; the second usually developed later and was characterised by vasomotor instability. WILKINSON finds that the later phase coincides with a decrease of the plasma volume below the pre-infusion level. This was observed in all the subjects within about two and a half hours of completing the infusion and was accompanied by the movement out of the vessels of up to 30% of the total circulating albumin and dextran. Thereafter dextran re-entered the circulation, and the total circulatory protein was greater than before the injection; the plasma volume increased and remained above the pre-infusion level for many hours. During this last period the volunteers complained of fullness of the head, precordial pain, and breathlessness on exertion. WILKINSON has given the same solution of dextran to "shocked" patients (he does not say how many) with only 2 mild and transient reactions.

HEISTØ and LUND [1] have described a somewhat similar sequence in 29 normal people, each of whom was given an infusion of 1000 ml. of one of eight different batches of dextran, derived from different strains of *Leuconostoc mesenteroides* and prepared by acid hydrolysis or thermal or ultrasonic degradation. Reactions broadly similar to those now described by WILKINSON were noted in 15 of the 29 subjects. In 13 the reaction was accompanied by diminution of plasma volume (after an initial increase) below the original level and decrease of total circulatory protein. In non-reactors and 2 of the reactors the plasma volume was increased during the five-hour period of observation and there was no appreciable change in total circulatory protein. HEISTØ and LUND found that the incidence of reactions was related to the strain of *L. mesenteroides* used in preparing the dextran, but not apparently to the method of preparation. NEILL and ABRAHAMS [2] have demonstrated cross-reactions between antisera to *Salmonella typhi* and other members of the salmonella group, and native and clinical dextrans; and HEISTØ and LUND say that in their study the severity of reactions seemed to be related to the time which had elapsed since T.A.B. inoculation. This, however, may have been fortuitous, for the number given each type of dextran was small. In a larger American series [3] no relation could be found between the number and type of prophylactic inoculations and the incidence of reactions. Like WILKINSON, HEISTØ and LUND found that their batches of dextran could be given without ill effect to patients with oligæmic shock.

KABAT and BERG [4] and MAURER [5] have investigated a large number of native and clinical dextrans and have shown that these, given in 1 mg. doses subcutaneously to normal individuals, are antigenic, judging by the development of precipitins and cutaneous sensitivity of the weal and erythema type. Precipitins and positive skin reactions were found in some of the volunteers before the dextran was injected, indicating that they had already been immunised by some means. These workers conclude that the dextrans themselves were antigenic and that the antigenicity was not attributable to linkage to protein or some prosthetic group. This antigenicity seemed to be related to the chemical structure of the dextrans, some of which evoked less antibody than others. The numbers of subjects injected with each dextran were too small for conclusions on the relative antigenicity of each batch or on the proportion of normal people who are already sensitised. If, as MAURER suggests, some people do not respond to dextran as an antigen the interpretation of the results is all the more difficult, since the proportion of non-reactors is unknown. KABAT and BERG suggest that the urticarial or allergic reactions observed after injecting dextran in normal people, or in patients, are probably caused by the presence of antibodies to dextran. MAURER considers that antibodies to pneumococcal polysaccharides, types II, XII, or XX, which are known to give cross-reactions with dextran, are probably not of great clinical significance, since he found that the anti-dextran antibody nitrogen levels were much the same before and after absorption with these polysaccharides. NEILL et al.[6] have shown that dextran is a common contaminant of commercial sugar, and HEHRE and NEILL [7] have isolated dextran-producing organisms from the human intestine. KABAT and BERG, and MAURER, suggest that in certain circumstances either or both of these factors may possibly provide an antigenic stimulus so that antibodies to dextran are formed.

It seems clear that some people are sensitive to certain kinds of dextran, but the response to a small dose of antigen is not necessarily the same as that elicited by a large dose. FELTON and OTTINGEN [8] have described a state of "immunological paralysis" with polysaccharide antigens. In patients the response to an antigen may be altered by the disease or by anæsthesia. Dextran solutions of many kinds have been given to thousands of patients, and it is most important to know whether any have become immunised. So far as we know, there have been no reports on the effects of second infusions of dextran in patients, or of observations designed to show whether any patients given an infusion of dextran become sensitised and show the type of response described by KABAT and BERG and by MAURER. The lack of adverse reports may indicate that very few patients, or none, are sensitised by an infusion

1. Heistø, H., Lund, I. *J. Oslo Hosp.* 1953, **3**, 164.
2. Neill, J. M., Abrahams, I. *Proc. Soc. exp. Biol., N.Y.* 1951, **78**, 537.
3. Report to National Research Council, Washington, January, 1952.
4. Kabat, E. A., Berg, D. *J. Immunol.* 1953, **70**, 514.
5. Maurer, P. H. *Proc. Soc. exp. Biol., N.Y.* 1953, **83**, 879.
6. Neill, J. M., Hehre, E. J., Sugg, J. Y., Jaffe, E. M. *J. exp. Med.* 1939, **70**, 427.
7. Hehre, E. J., Neill J. M. *Ibid.* 1946, **83**, 147.
8. Felton, F. J., Ottingen, B. *J. Bact.* 1942, **43**, 94; *J. Immunol.* 1949, **61**, 107.

of dextran. This is supported by a series of observations on normal individuals in America [9] which showed that second infusions of dextran four to twenty-three months after the initial infusion were not followed by systemic reactions, except in those who had reacted to the first infusion; and in these the reactions to the second infusion were not more severe than the reactions to the first. Furthermore, the incidence of positive reactions to the intracutaneous injection of dextran in people who had previously been given an infusion of dextran was the same as in persons who had never been given dextran. This indicates that infusion of dextran had not given rise to true sensitivity.

There is still much to be learnt about dextran. Certain strains of *L. mesenteroides* are poor antibody producers in animals; it would be worth investigating whether the corresponding dextrans are only weakly antigenic or even non-antigenic in man. There is evidence that the antigenic response is influenced by the chemical structure of the dextran and possibly also by its molecular size, and varying the composition of the medium in which the organism is grown is known to affect the chemical structure of the dextran produced. Further study of this aspect would seem worth while. Furthermore, it would be valuable to secure agreed physical and chemical methods for characterising the many different dextrans; many reports give insufficient information for the dextran to be identified.

In the last five years dextran has been investigated more intensively than probably any other plasma substitute; and the story, in unfolding, has gradually become more complex. As examination of the other plasma substitutes progresses, a similarly involved picture is likely to develop. Some of the new information about dextran merits careful thought; but the clinical evidence suggests that dextran solutions can be administered safely.

Facts from General Practice

Two factors are helping to secure for general practice the prominence it has always deserved but which it was in danger of losing. One is concern over the increasing cost of the hospital service and the tardy realisation that, if the general practitioner is to check this drain on national resources by himself investigating and treating illness in its early stages, he must receive both credit and help—including access to investigation departments. The other factor is a new awareness that, in our preoccupation with hospital techniques, we have been neglecting first causes in the home and the place of work. Had research into these causes been pursued as vigorously as that into the causes of infectious diseases, the total of our people's ills might now be less; and if this backwardness is to be ended we shall have to look largely to the general practitioner, who is better placed than most to study the influence of heredity and environment on health and disease in the individual and the family. Here again he needs help; and he needs, too, the opportunity to coöperate with his fellows. Fortunately, both are likely to be obtainable through the College of General Practitioners.[10]

But if the family doctor is to make a serious incursion into this field, he must know the extent of morbidity in the population, and the contribution of each disease to the total—a subject on which we still have little precise information. As a source of this essential knowledge the experience of general practitioners themselves is necessarily imperfect; but it is about the best we have at the moment. A first attempt to tap this source is recorded in a report,[11] issued this week, in which Dr. W. D. P. LOGAN, chief medical statistician of the General Register Office, sets out the results of a year's experience (from April, 1951) in eight widely different practices. The eight practitioners recorded the date and place of consultations, certificates issued, referral to hospital or elsewhere, and diagnosis or other reason for consultation. These data have yielded information which, though it may not apply to the country as a whole, goes some way to replace impressions by facts.

Reasons for consultation.—The two diseases responsible for the largest proportions of consultations were acute nasopharyngitis (common cold) (60·9 consultations per 1000) and bronchitis (53·0 per 1000); additional to the latter were acute bronchitis (4·9) and chronic bronchitis (10·8), giving a total for bronchitis of all kinds of about 68·7 per 1000. Next came influenza (26·5) and acute tonsillitis (22·1). Other conditions that accounted for more than 10 consultations per 1000 total were asthma (10·5), asthenic reaction (neurasthenia, &c.) (11·1), otitis media (19·7), hypertension (16·3), pneumonia (12·4), gastritis (11·9), functional gastric disorders (indigestion, &c.) (14·1), gastro-enteritis (12·6), boil and carbuncle (15·6), dermatitis (10·2), muscular rheumatism (16·0), "rheumatism" (15·0), cough (11·4), and routine antenatal examinations (19·4).

Respiratory diseases accounted for 24% of all consultations; digestive diseases for 9%; diseases of the nervous system and sense organs for 8%; circulatory, locomotor, and skin diseases for 7% each; infectious diseases for 6%; and injuries for 5%. Allergic and endocrine diseases and genito-urinary disease were each responsible for 4%; the mental and psychoneurosis group for 3%; and neoplasms, blood diseases, and maternal complications each for 1%. Symptoms and senility accounted for 8%; and reasons other than sickness for 5% of the total.

Sex differences.—Three out of every five consultations recorded were in respect of female patients; but, taking account of their larger numbers in the practice populations, this excess was only 25%.

Place of consultation.—68% of all consultations were surgery attendances, 27% were home visits, and 5% took place elsewhere.

Certificates.—The diseases that accounted for the largest proportions of certificates (including National Health Insurance, private, and other certificates) were:

	Proportion per 1000 total certificates	
	Male	*Female*
Psychoneurotic disorders	17·7	43·8
Acute nasopharyngitis	46·3	70·0
Acute tonsillitis	20·7	28·0
Influenza	80·9	54·1
Bronchitis	91·3	53·1
Ulcer of stomach and duodenum	46·6	11·6
Fibrositis	27·4	18·2
Maternity antenatal	—	35·4

Of all certificates issued 29% were for respiratory diseases—well over twice as many as for diseases of the digestive system, which were the next most common reason for issuing a certificate. Certificates for non-medical pur-

9. Report to National Research Council, Washington, April, 1952.
10. College of General Practitioners: First Annual Report, 1953. See *Lancet*, Oct. 31, 1953, p. 924.

11. General Register Office: Studies on Medical and Population Subjects, no. 7. General Practitioners' Records: An analysis of the clinical records of eight practices during the period April 1951, to March, 1952. By W. P. D. LOGAN, M.D., PH.D. chief medical statistician, General Register Office; with a foreword by Sir John Charles, M.D., F.R.C.P., chief medical officer of the Ministry of Health. H.M. Stationery Office. Pp. 131. 8s. 6d.

poses (e.g., countersigning of claims for family allowances, old-age pensions, and tobacco tokens) accounted for only 0·3% of all certificates issued.

Referrals.—The most frequent diagnoses for which patients were referred to hospital or elsewhere were:

	Proportion per 1000 total referrals	
	Male	*Female*
Psychoneurotic disorders	26·2	21·2
Acute tonsillitis	28·1	27·2
Bronchitis	63·3	33·1
Ulcer of stomach and duodenum	25·6	10·6
Appendicitis	20·5	23·3
Disorders of menstruation	—	31·8
Fractures	23·7	16·1
Maternity antenatal	—	58·5

The conditions for which admission to hospital was most often arranged were appendicitis and pneumonia.

Number of consultations.—The average number of consultations during the year per patient on the doctors' lists was 3·4 for males and 4·2 for females.

From these and many other findings tabulated in the report, Dr. LOGAN concludes that simple data of the sort recorded by the eight practitioners are suitable for statistical analysis. He admits that conscientious recording was an additional burden on the doctors; but the weight of this, he feels, was greatest at the start, and he believes that such a system can be kept going without undue difficulty even during busy periods. "There can be little doubt," he says, that general practitioners' records "potentially constitute one of the most valuable sources of information on morbidity." The size and scope of the inquiry may eventually be increased; but meanwhile it is being continued on the same lines for a second year. Dr. LOGAN adds two warnings. One is that terminology and measurement throughout the whole field of morbidity statistics are still being developed, and the best methods of tabulation are undecided. The other is that doctors who think of embarking on their own comprehensive analysis should recognise that this is likely to prove much more burdensome than the record-keeping itself. Even the General Register Office, with its large resources, seems to have been quite heavily taxed in analysing the data from this limited survey.

This survey was designed to show what constitutes general practice. But clearly a similar approach might throw much new light on the sources, extent, and effects of morbidity. It is a strange twist that has brought the family doctor, who prides himself on dealing with individual people, to his present position in which, in league with a Hollerith machine, he will be handling masses of figures. Perhaps this first account will give him heart for the task.

Annotations

MAN AND DISEASE

THE historical record of man's early steps towards the understanding and treatment of disease may often seem to the student a jumbled and unhelpful story that is of little use to him in absorbing present-day teaching. But careful study and perceptive interpretation can pick out the threads from this tangled tale and turn it into a fascinating introduction to the more familiar events of recent years. And this is what Sir Henry Cohen did at the Royal Society of Medicine last week when, in his presidential address to the section of medicine, he discussed the Evolution of the Concept of Disease.

Primitive man was little concerned with the nature or cause of disease: he concentrated on its cure. Sir Henry pointed out how the earliest remedies were based on certain doctrines which, though they were crude and supernatural, had profoundly influenced later thought. There was the doctrine of similars whereby, for example, stewed raven was the cure for greying hair; the doctrine of signatures which held that distinctive markings on a plant indicated its medicinal properties (thus, yellow celandine was the thing for jaundice); the doctrine of analogy which drew comparisons between the treatment of animals and of man; and the doctrine of contagion which attributed a baleful influence to external forces and which led, among other things, to the popularity of moonstone for mental illness. When it came to the appreciation of the nature of disease, two ideas had dominated man's thought since earliest times: disease, as a separate entity quite distinct from the individual affected; and disease as a deviation from normal. These two views had coexisted until the present day, sometimes overlapping, sometimes one or the other predominating, according to the philosophy of the time and the influence of outstanding personalities.

The most primitive form of the "entity" idea was the explanation that disease was caused by a variety of evil spirits, which called for treatment by incantation, burnt offering, and sorcery. These practices could still be recognised from time to time in modern life: the raw potato carried for the prevention of rheumatism was the equivalent of the primitive amulet; and Sir Henry recalled a case in his own experience where the relatives of an Armenian patient had sacrified a pigeon in the belief that they might thereby instil new life into the dying woman. The notion of diseases as separate entities developed from this "demoniacal" concept: and it was fostered by the careful descriptions of individual illnesses recorded by Hippocrates and later physicians. They all dealt with particular cases, and no attempt at generalisation was made until the 9th century A.D. when Rhazes of Persia differentiated between smallpox and measles. As many separate diseases became recognised, the idea gained ground and it was given impetus in the 17th century by Linnaeus's *Systema Naturae* in which he observed that "there are as many species as there are diverse forms that were created in the beginning," and by Sydenham who declared that diseases were "to be reduced to certain and determinate kinds, with the same exactness as we see it done by botanic writers in their treatises of plants." The entity point of view reached its peak perhaps, when in 1763, François Boissier de Sauvages, botanist and physician (botanist first it seems), grouped diseases into classes, orders, genera, and species (of which there were 2400 in all). This conventional and rationalistic outlook of A (the patient) plus B (the disease) was still apparent, Sir Henry thought, in much of our teaching today. It was often responsible for a misguided dependence on pathognomonic physical signs and a fondness for the penny-in-the-slot diagnosis.

The alternative view of disease as a deviation from normal had its roots in Greece, whose philosophers sought to generalise from inadequate particulars and to conceive the whole of Nature without a sufficient knowledge of its parts. They developed the idea of the four humours—blood, phlegm, yellow bile, and black bile—that was to dominate medicine for 2000 years. But it was before the humours were described that Plato first stressed the discord of disease, attributing it to abnormal quantity, quality, or position of the four elements of the body. Plato's views led to the school of thought whose followers Galen called the Dogmatists, and who held the field for a century after the death of Hippocrates. They were

followed, in the 2nd and 3rd centuries B.C., by the reactionary Empirics who, though they were mainly concerned with treatment, had the idea of a syndrome. And a century or so later came the Methodists who simplified everything by classifying all diseases according to the state of the pores: relaxed pores called for astringents and constricted pores for laxatives, so that treatment was very simple. From these early beginnings the idea of deviation from normal had to await the development of anatomy and physiology before it made substantial progress; and things did not begin to move until the 16th and 17th centuries. Physics and chemistry then began to play their part in disclosing the deviation from normal, and Sir Henry particularly emphasised the significant effect on medical thought of the synthesis of urea in 1828, which showed clearly and for the first time the relevance of chemistry to medicine. The discoveries of the 19th century brought increasing knowledge of the normal and departures from it; but there was still the risk of interpreting such newly recognised conditions as hyperchlorhydria, hypertension, and polycythæmia as distinct entities.

Turning to the present scene, Sir Henry declared that the concept of disease as a deviation from normal should dominate our teaching and our approach to medicine. The constant patterns—the syndromes or symptom-complexes—in which symptoms and signs appeared always indicated one or more of three aspects of disease: its site, the associated functional disturbances, and the causative factors. Specific and common patterns could conveniently be regarded as entities, but there were dangers in giving too much scope to this view, which lulled the doctor into being satisfied with a label and reduced thought to a minimum. Philosophic inquiry in medicine was apt to be regarded as an arduous eccentricity for which few physicians today had either the opportunity or the inclination. But it was, Sir Henry concluded, a worthwhile pursuit, for it helped to keep a balance between our dogmatism on the one hand and our scepticism and discouragement on the other. Above all, it inculcated humility in the presence of great minds which was the surest shield against intellectual arrogance.

DEHYDRATION IN INFANTS

THE last few years have seen rapid developments in fluid and electrolyte therapy based on physiological principles established during the past three decades. But treatment by fluid replacement is over a hundred years old, for the first reported cases were treated by Dr. Latta during a cholera epidemic in Scotland in 1832.[1] Progress thereafter was slow, but, following the work of Marriott [2] on dehydration in infancy, fluid replacement speedily established itself as of outstanding importance in the treatment of many diseases—and especially those producing diarrhœa in infants. At the annual meeting of the Australian Pædiatric Association earlier this year the present position of this method of treatment in infants was reviewed in four papers that have now been published. Macdonald,[3] dealing with the physiological principles involved in the maintenance of the fluid and electrolyte balance in infancy, emphasises the importance of using the correct terminology in discussing electrolytes. But, as Dr. Ennis points out in our correspondence columns this week, many clinicians do not take kindly to the milli-equivalent and prefer to stick to the familiar "milligrammes per 100 ml." They are reproved for their reluctance to move with the times by Professor Dods,[4] who pointed out at the Australian meeting that "it was only by talking and thinking in these terms of chemical equivalence that they could have any real concept of electrolyte patterns. Without this concept of electrolyte anatomy, any discussion of the problem must necessarily be vague and nebulous."

The electrolyte pattern of the newborn infant differs from that of an adult in several ways.[5] The potassium, chloride, sulphate, and phosphate content of the plasma is higher and the bicarbonate and protein levels are lower. In the premature baby the bicarbonate level is even lower than in the full-term newborn, and the tendency to acidosis that is present in all newborn babies is more definite. The control of acid-base equilibrium is often unstable and the regulating mechanism of the kidney is incompletely developed. Campbell [5] points out that late tying of the cord may add from 3 to $3^1/_2$ ounces of blood to the baby's circulation, equivalent to giving a 10-stone adult a blood-transfusion of $3^1/_2$ pints. She advocates delayed feeding of newborn infants, whether premature or full-term, principally in order to give the babies rest. Premature babies begin to look dehydrated at forty-eight hours and Campbell advises that the administration of fluids should begin then, especially if the infant is much jaundiced: fluids should be given parenterally if the infant is not taking too well by mouth. In her view the high serum-bilirubin, together with low blood-glucose level, may be dangerous to brain tissue and is a possible cause of "premature kernicterus." [6 7] Williams,[8] discussing the management of dehydration in enterocolitis, also emphasises that assessment can be made largely on the clinical evidence and that biochemical tests are not essential in the early acute phase. The Australian recommendations for treatment are similar to those given in the recent Medical Research Council memorandum on the treatment of acute dehydration in infancy.[9] One important point is that potassium depletion is likely to occur if long-continued intravenous therapy is given without the administration of potassium.[10]

Finally, Stuckey [11] deals with the surgical aspects of dehydration in infancy and childhood, with particular reference to high intestinal obstruction. Dehydration in these patients is due partly to the abnormal losses of intestinal secretions by vomiting, aspiration, or fistulæ, and partly to the failure to take or retain normal amounts of fluids by mouth. Treatment is planned in four phases. The first step is resuscitation, either from surgical shock or from severe dehydration. Stuckey favours blood or serum given fairly quickly; he does not mention plasma, which is more commonly used in this country. If dehydration is severe the protein-containing fluid is followed up with glucose-saline solution. The second phase is concerned with the correction of moderate dehydration over the next twenty-four hours with replacement fluids, in amounts equal to 6% of the body-weight, followed by maintenance fluids, in amounts up to 15% of the body-weight daily. Stuckey recommends that the replacement fluid should contain potassium as well as sodium, but some may question the routine use of potassium at this stage. The third phase, starting on the second day of treatment, consists in making up any deficit and in maintaining fluid and electrolyte balance. On the third and subsequent days the balance is maintained and protein or amino-acids are given. Throughout a constant check is kept on all fluid losses so that the balance can be carefully regulated.

The chief lesson seems to be that effective treatment, derived from sound physiological principles, can be given without recourse to expensive, and often unobtainable, biochemical assistance.

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2. Marriott, W. M. The Harvey Lectures. Series 15. 1919–20; p. 121.
3. Macdonald, W. B. *Med. J. Aust.* 1953, ii, 197.
4. Dods, L. *Ibid*, p. 226.
5. Campbell, K. *Ibid*, p. 201.
6. Aidin, R., Corner, B., Tovey, G. *Lancet*, 1950, i, 1153.
7. Govan, A. D. T., Scott, J. M. *Ibid*, 1953, i, 607.
8. Williams, H. *Med. J. Aust.* 1953, ii, 203.
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THE BLIND IN OUR MIDST

AN increase in newly registered blind persons from 7586 in 1948 to 11,155 in 1951 is revealed in a report by Prof. Arnold Sorsby.[1] The bulk of the new registrations now come from the oldest age-group; but clearly the extension of welfare services, and greater readiness of patients to seek certification and, hence, of doctors to certify borderline cases, have also played a part.

Cataract, glaucoma, and senile macular degeneration, together, now account for 59·7% of all cases of blindness. In 1950, as many as 80% of cataract patients are reported as not having had treatment. This seems deplorable at a time when advances in the technique of cataract extraction have made the operation, in expert hands, safer and more widely applicable than in the past. The matter certainly calls for further inquiry. The problem of glaucoma is less tractable, principally because of the insidious course of the disease in the ageing. The disease may be halted in its early stages by timely operation; and thus prompt detection is of the greatest importance. The growing number of glaucoma clinics in association with eye hospitals is a token of medical awareness of this problem. More such cases are likely to come under medical care at an operable stage when the supplementary eye service is superseded by the permanent service.

FITNESS AND HEALTH

AT Leighton Park last Saturday Sir Russell Brain, P.R.C.P., opened a big new gymnasium which forms part of the school's war memorial. What, he asked, is the relation between fitness in the everyday sense of keeping fit and fitness as the biologist uses the term when he speaks of survival of the fittest? Fitness to survive depends on changes that give an organism increased control over its environment; but all creatures alive today must have passed this survival test. Man, the tiger, and the typhoid germ all equally come within the biological definition of fitness; and though man may regard himself as of more value than a typhoid germ that after all is only his prejudice.

It is obvious, continued Sir Russell, that health has played and is still playing a major part in evolution: to be fit (in the full or ideal sense) is surely to be able to make the best possible use of one's capacities, both physical and mental—which in biological terms means being as fully adapted as possible to one's environment. What then is health? In its negative definition it is the absence of disease. But disease is itself a negative term, meaning the absence of ease. Can we then define health as the absence of the absence of ease? To do this is not only to go round in a circle but to make health and disease look simpler than they really are. The *Nomenclature of Diseases* itemises 15,000 ways of being ill; no doubt others are waiting to be discovered; and the more we understand of these diseases the more complex we find them. In the case of many infections, for example, it is true to say that whether a person catches them or not depends on a long chain of circumstances many of which are entirely outside his control. There is not some single condition called health which has magic properties which make people immune to every kind of illness. The prevention of disease depends first on knowledge and then usually on the coöperation of numbers of different people in different spheres of life—including, of course, the potential patient.

"But I am afraid that the part the potential patient can play is, on the whole, rather limited, and what are sometimes called a few simple rules of health, however desirable they may be in themselves, and however they may promote a sense of well-being, have on the whole very little to do with the prevention of the majority of diseases. It follows that anyone who propounds some simple way of maintaining health, and preventing all or a large number of diseases, receives no support from science."

Turning to health of mind, Sir Russell agreed that we live in one of those epochs when human culture suddenly undergoes a rapid change. But stress of life is inseparable from living; it is part of the evolutionary process. Our problem is how to adapt ourselves to new ideas and modes of living and how to face emergencies which may threaten both our individual existence and our civilisation. This is not a problem to which medicine, as such, can give any answer. The doctor may make the diagnosis; but the stresses of modern life are part of the culture to which he himself belongs, and any possible way of dealing with them must reach out far beyond medicine and concern itself with a belief about ultimate things on which doctors differ as much as other people. Offering what was therefore a personal rather than a medical view, Sir Russell pointed out that happiness contributes to peace of mind and therefore to health of mind and health of body; and on the whole the happiest people are those whose work is of such absorbing interest that for them there is no great distinction between work and play. He believed, too, that the nature of man is such that his happiness is closely related to the life of Nature and the cultivation of the soil: "I suspect that in any society there is a certain critical balance between agriculture and industry, and when the balance is tipped too far in the direction of industry some virtue goes out of the society." And finally there is the spiritual isolation of modern man.

"Cut off largely from the rhythms of the earth, from the natural ties of the small community, from conscious communal efforts, and from the secular and religious festivals in which the individual and the community alike found expression and satisfaction for their deeper feelings, modern man experiences a spiritual hunger of the nature of which he may be hardly aware. Perhaps one thing which made the Coronation ceremony so moving was that it momentarily satisfied this deep human need. Here, I believe, is the cardinal problem which modern society has to solve if men and women are to be able to cope with its inevitable stresses."

But the view of health as the absence of disease of body and mind is very incomplete: it is not enough not to be ill—even not to be ill in 15,000 ways. We must make it our aim that everyone should have the best opportunities for the fullest possible development and use of both his body and his mind. This idea of positive health (sometimes claimed as a modern discovery) is, like the word "gymnasium," as old as Plato—who thought that one of the virtues of gymnastics was that it kept the doctor away, though he admitted its impotence against what he called "an attack of illness incidental to the time of year." In the gymnasium people learn endurance, control, and (issuing from that) poise or balance, and we know by experience, as Plato knew, that training in these bodily virtues develops them also in the mind.

Man is regarded as supreme among animals because his nervous system is by far the most complex, reflecting the enormous range of his interests and activities; and if it is argued that the tendency of evolution is to produce creatures which react to an ever wider and richer environment, then man represents the highest point so far reached. But can we assume, asked Sir Russell, that contact with a complex environment is in itself a good thing? The amœba might well defend the simple life! To what environment, then, is man required to adapt himself? More and more people would now say that all there is for him to adapt himself to is the material world, as analysed, measured, and calculated by the scientists; but future historians of thought may be surprised at the long acceptance of this materialist philosophy by so many intelligent people. If the material world is all,

1. The Causes of Blindness in England 1948–1950. Report by Prof. Arnold Sorsby. H.M. Stationery Office. 2s.

there can be no basis for lasting values independent of material forms; but if it is not the whole story, at least the door is opened for exploration of a realm in which such values could exist. One form of life or mode of living cannot be regarded as better than another unless values exist which transcend the laws which govern the behaviour of matter. If so, as Walter de la Mare says:

> "Two worlds have we, without; within;
> But all that sense can mete and span,
> Unless it confirmation win
> From heart and soul, is death to man."

This means, said Sir Russell, that health, valuable as it is, cannot have top priority: it must often be sacrificed for some greater end; and some of the greatest servants of mankind have not only triumphed over illness but have somehow made their sufferings serve a higher purpose. He ended his address by saying:

> "Health, if you like, is a means to fitness; but fitness—for what? I leave that question with you as I declare open this gymnasium, dedicated to fitness of body and mind and to those spiritual values for which those whom it commemorates gave their lives."

HOSPITAL COSTING

THE Minister of Health has set up a working party to devise a practical system of departmental and unit costing in hospitals, on the basis that subjective accounting will be retained. This action arises from consideration of the reports on costing by King Edward's Hospital Fund for London and the Nuffield Provincial Hospitals Trust,[1] and also the second report on costing of a subcommittee appointed by the Committee of Regional Hospital Board Treasurers. Mr. W. O. Chatterton is chairman of the working party, which includes representatives of the Ministry, the administrative and financial officers of hospital authorities, the King's Fund, and the Nuffield Trust. The working party, which is being asked to complete its task, if possible, in six months, will be free to suggest different systems for different types and sizes of hospitals.

COLD-STORAGE OF LIVING CELLS

Thomas Alva Edison is reported to have said: "Invention is ten per cent inspiration and ninety per cent perspiration." This description is particularly appropriate to the invention of methods of preserving living cells in the frozen state. The idea that animation might be suspended indefinitely has often inspired attempts to preserve cells at low temperatures. Success was rare because of the particularly destructive effects of the act of freezing and because it was not realised that each type of cell required an individual technique of freezing. It was discovered in 1949[2] that death on freezing could be avoided if the cells were suspended in a medium containing glycerol, and this removed at one stroke the main barrier opposing the preservation of living cells in the frozen state. The importance of the discovery has been shown by the astonishingly rapid progress in the last four years, which was reviewed at the Royal Society of Medicine on Oct. 27.

The use of glycerol to preserve frozen yeasts, protozoa, red blood-cells, spermatozoa, and even organised endocrine tissue was surveyed by Dr. Audrey U. Smith. Adverse effects, such as thermal shock and the differences between cells in their permeability to glycerol, make necessary individual techniques of freezing for each type of cell and tissue. The mechanism of the protective action of glycerol appears to be clear-cut and simple.[3] According to Dr. J. E. Lovelock the most serious and unavoidable source of damage on freezing is the rise in concentration of the electrolytes of the cell and its medium. Glycerol prevents this excessive increase of salinity, which is otherwise unavoidable when water is removed as ice during freezing.

Skin is a complex mixture of cellular types, and the development of a method of freezing and storage which harms none of them is a considerable achievement. We have already commented[4] on the success of Billingham and Medawar[5] in storing rabbit skin without loss of function for one year at —78°C. In describing this and other experiments on the preservation of skin, Prof. P. B. Medawar, F.R.S., emphasised the singular lack of toxicity of glycerol. Its effectiveness as a preservative must depend greatly on this property, for during freezing it displaces much of the water within the cell.

The successful transfusion of human red blood-cells after long storage at —78°C is an accomplished fact.[6] To freeze and store a few bottles of blood at this temperature is fairly simple, but to freeze a blood-bank to this temperature would be a major engineering problem. Washing of red blood-cells after storage, to remove glycerol, is also no simple matter when large volumes of cells have to be treated. Progress towards the solution of these practical problems was discussed by Dr. P. L. Mollison. An account of the successful transfusion of red blood-cells after three months' storage at —20°C was particularly encouraging. If blood can be kept at this temperature large-scale storage of frozen blood may soon be feasible.

DISHARMONY IN HYBRIDS?

THE family doctor is from time to time consulted about a proposed inter-racial marriage. There may be serious risks to many such marriages from the different social backgrounds of the partners; but there are also often held to be risks that the children may show disharmony of physical growth. Trevor[7] has assessed and analysed all the information he could find on physical measurements of racial hybrids. In many ways this information is deficient: the original parents, living perhaps 300 years ago, were of course not available for measurement and some related family group had to be measured instead; the techniques of measurement used are not always clearly stated; and the composition of the two parent races is not always as clearly known as in the Norfolk Islanders, who are more or less equally derived from English seamen from the *Bounty* and Tahitians. But certain general conclusions emerge. Thus for nearly every character the mean values for the hybrids lie between those for the two parental races; the distribution of measurement round the mean is approximately normal and shows no signs of bimodality; and the variation shown by the hybrid group is (surprisingly) not much, if any, greater than that of the parental races. There is, then, no reason to expect disharmonious skeletal growth in the children of inter-racial marriages.

THE Nobel peace prize for 1952 has been awarded to Dr. ALBERT SCHWEITZER, who for many years has worked as a medical missionary in Central Africa.

THE next session of the General Medical Council will open on Tuesday, Nov. 24, at 2 P.M., when Prof. DAVID CAMPBELL, the president, will deliver an address. The Medical Disciplinary Committee will meet on Wednesday, Nov. 25, at 11 A.M.

1. See *Lancet*, 1952, ii, 1067.
2. Polge, C., Smith, A. U., Parkes, A. S. *Nature, Lond.* 1949, **164**, 666.
3. Lovelock, J. E. *Biochim. biophys. Acta*, 1953, **11**, 28.
4. *Lancet*, July 4, 1953, p. 26.
5. Billingham, R. E., Medawar, P. B. *J. exp. Biol.* 1952, **29**, 454.
6. Mollison, P. L., Sloviter, H. A. *Lancet*, 1951, ii, 862.
7. Race Crossing in Man: The Analysis of Metrical Characters. By J. C. TREVOR, PH.D., lecturer in anthropology, University of Cambridge. Eugenics Laboratory Memoirs, XXXVI. London: Cambridge University Press for the Galton Laboratory. 1953. Pp. 45. 12*s*. 6*d*.

Special Articles

MAKING THE MOST OF PRESENT RESOURCES

SECOND HEALTH SERVICES CONFERENCE *

THE first conference of the Institute of Public Administration was held 2½ years ago; and at that time everyone agreed that what was needed in the National Health Service was more coöperation. Mr. HENRY LESSER, who took the chair at the second conference, held in London on Oct. 28–30, remarked regretfully that no general pattern of coördination has emerged. The popularity of the service with the public is beyond question, but the increasing cost, however, is giving rise to anxiety. There are two ways of using resources to the best advantage: (1) by ensuring that the structure of the service is good, and (2) by raising the standard of day-to-day management.

FINANCE IN THE DEPLOYMENT OF PRESENT RESOURCES

Mr. LESLIE FARRER-BROWN (secretary of the Nuffield Foundation) recalled that of the £500 million we spend on the N.H.S., 60% goes to the hospital service, 30% to the practitioner services, and 10% on the rest; or breaking it down another way, 60% goes on wages and salaries and 40% on materials. The increases have been mainly in salaries and wages, partly in increases of staff; and salaries and wages must always be the chief cost. Inevitably we have to ration our resources: no country can meet all the potential medical needs of its people. If we think that £*x* million should be spent on the general-practitioner service we must be ready to suggest what else can be cut down to allow for it. The quality of personnel is of the first importance; for judgments are made by people, and better judgments will be made by better minds supplied with better information, and spurred to achieve better results. We must study scientifically the ways of doing things, and pass on the knowledge gained to those working the service. We must also make up our minds, he said, whether we want decentralisation of authority, or more centralisation; for the present compromise is most unhappy.

Prof. R. M. TITMUSS (professor of social administration in the London School of Economics) said that resources are being wasted because of factors outside the health service. If we take no steps to control road accidents we must expect more demands on casualty departments. If we insist on building 2-bedroom houses we must expect to give more custodial care to the aged sick. Little thought is being given to these preventive factors: we are concentrating more today on getting the general practitioner into the hospitals than into the local community service. A small London investigation into the use made of the social services by people over 70 living alone revealed that only 1 in 40 of them had learnt of these services from their general practitioners: they had usually learnt of them from neighbours, friends, or conversations heard in buses. The highest demands on the services of practitioners and hospitals comes from a relatively small group of the public—from the aged, the disabled, the victims of road accidents, mentally sick adults, and emotionally disturbed children. If preventive work could reduce the demands for treatment from this group, then the costs of the service might be reduced by as much as 20%. We *must* integrate the family doctor with the local welfare services. From the medical staffs of hospitals we need a greater sense of personal responsibility, and a greater loyalty to the whole purpose of the hospital rather than to their own specialty.

Mr. J. C. DAVIES (chairman of the Fountain group of hospitals), believed that every organisation could be more economically run, and advised members of all committees not to concern themselves merely with things in the process of change—which are naturally brought to their attention—but also with the things which are continuing, and therefore apt to go unscrutinised. Cost-accounting allows comparisons to be made not only between one hospital and another, but also between costs in the same hospital at different periods. If a hospital could use the money it saved for other purposes within its own economy, there would be more incentive to save; and he suggested that the service needs an "economy salesman," to point out the rewards of thrift.

Mrs. ORMEROD, speaking from long experience gained on hospital management committees, agreed that there has been a decrease in social responsibility among medical members of hospital staffs, though when they and their wives had to raise money for the voluntary hospitals they responded splendidly. They are also reckless in the use of woman-power in the form of nurses, almoners, and record clerks. Mr. C. S. BANGAY (clerk to the London Executive Council) thought the partition of the service under three heads makes agreement harder to arrive at than a truce in the Far East. He favoured the establishment of a central coördinating body, and the removal of the Ministry of Health from the service.

Mr. GEORGE WATTS (secretary of the Oxford Regional Hospital Board) suggested that hospitals should allocate a small sum to research into methods of work on their own premises. One such survey in a general hospital had already pointed the way to possible savings; and the Oxford R.H.B. were consulting industrial experts about economies in the laundry and catering departments.

Other speakers emphasised the need for a common method of financing all parts of the service, the economies to be hoped for from prevention of disease and better health teaching, the importance of good food, and the great cost to the country from road accidents and accidents in the home. In replying, Mr. FARRER-BROWN confessed to favouring removal of central control from the Ministry of Health and giving it to an all-purposes health board, with subsidiary health boards at regional and local levels.

DOMICILIARY AND OUTPATIENT SERVICES

Dr. A. LESLIE BANKS (professor of human ecology at Cambridge) spoke of the changing pattern of disease in our time, and the shift towards middle and old age in the hospital population. Our investigation services, he said, have nearly reached saturation point, and the rapid turnover in the wards is a strain on the inpatient services. Much investigation formerly done in the wards is now done in the outpatient department; and more could be done there if quarters were not cramped, and if the special departments, added to the hospital when the pace was slower, could cope more quickly with the work reaching them. At present they are bottlenecks, wasting time and money. Lack of adequate appointments systems also wastes time—the patient's working time—and loses us money. The time of general practitioners, too, is wasted unless they can get speedy reports from special departments. He thought that before extending the domiciliary services we should improve those we have, improve outpatient facilities, and train a corps of administrators to deploy our resources better.

Dr. KENNETH COWAN (M.O.H. for Essex) said that the right person to deploy our domiciliary resources is the general practitioner; and he needs to know what they are. The local authorities should make their services readily available; the Government provides help and money for the disabled; and there are vast voluntary services not used to their full extent. He thought it strange that little has been done to provide a domiciliary

* The programme and papers of the conference have been printed by the Institute of Public Administration, Haldane House, 76A, New Cavendish Street, London, W.1.

geriatric service comparable to the geriatric service now provided in hospitals for the chronic sick. Plenty of trained nurses could be found to look after postoperative patients in their own homes. Domiciliary midwives are often unemployed while hospital maternity beds are full. There are thus many resources which administrative bodies are failing to use. Regional surveys might be made of special problems, and of facilities for dealing with them.

Dr. A. BEAUCHAMP (vice-chairman of the Birmingham Executive Council) thought postoperative pre-convalescent patients might certainly be nursed at home, provided the home is suitable. The general practitioner knows, and can—if asked—report on, the home. He suggested the reorganisation of outpatient departments. If appointments systems were used, the space wasted on outpatient halls could be used for other purposes. The patient who comes at 9, when the consultant is not going to turn up till 11, has not only a long wait but a *worrying* wait, and it is bad for him. Mothers should be encouraged to have their babies at home: our midwives are first-class, our home-help service getting better and better. To deliver a mother in hospital costs the country £40 for a fortnight's stay. Again, we are not teaching people to live healthily when we herd them into overcrowded houses in a smoky atmosphere.

Other speakers mentioned the failure of some hospitals to inform the general practitioner when a patient leaves hospital.

Dr. A. TALBOT ROGERS, chairman of the General Medical Services Committee of the B.M.A., thought the general practitioner should use the outpatient department for purely consultative purposes, and the patient should come back to him when the consultant has reached his diagnosis. Sometimes patients go on attending for months, perhaps so that a keen registrar can watch their progress. It is right that a patient should be seen again after an operation, but it is not right that the outpatient department should take over what the family doctor ought to be doing.

Dr. G. M. WILLIAMSON said that in Leeds they have formed a general-practitioner-hospital relationship committee which has already done grand work. Moreover, the geriatric committee of the regional board moves round the area and holds conferences, each lasting a day, with general practitioners, medical officers of health, and all others interested. This practice has been much welcomed.

A surgeon said that what he and his colleagues used to think of as "our hospital" was now one of a group, with its administrative centre six hours' journey away. In defence of his brotherhood he added diffidently that he was punctual, wrote his letters, and kept a social dossier of every patient he saw. Dr. R. I. MACALLUM (Newcastle) also spoke well of the punctuality of surgeons, and reported on the good success of an appointments system so arranged that the consultant was able to see up to 20 new patients by a certain time.

In reply, Professor BANKS noted that the discussion put the general practitioner right in the centre of the picture. There is nothing radically wrong with the service, but we want, he said, three things: we want to know how much we can spend; we want the best administration we can get at the local level; and then we want to leave the damned thing alone for five years.

THE WHITLEY SYSTEM

Mr. K. J. JOHNSON (a member of the ancillary staffs Whitley Council), in his printed contribution, explained that the Whitley Councils are made up of two sides, one representing employers, the other employed. Decisions are reached by agreement of both sides, there being no voting *between* the sides, though there may be voting *within* the sides. Failure to agree leaves both sides free to seek arbitration. He said (at the third session of the conference) that he represented the employer's point of view. The decisions of the councils are often shown to result in anomalies of pay and conditions; and their machinery is said to take an unconscionable time to work; but while he agreed that these allegations are true he thought the work of the councils must be judged as a whole and that it would be difficult to speed it up. One cause of delay, he believed, is the too common appeal to arbitration. Many of the appeals are trivial, even frivolous. He criticised the composition of the staff side. Organisations which are already represented on it are naturally not willing to cede places to any new organisations which may be formed; so these sometimes find it very difficult to get representation. Again, both sides of the council ought to have equal responsibility for the conduct of the service; but it happens that the employer side have to be responsible for the cost, while the employee side have to put the interest of their members first. The agreements of the councils are thus nearly always a compromise, and should be accepted as such.

Dr. JOHN GIBSON (formerly medical officer of health for Huddersfield) wished to see better coördinated results. It should not be possible for a nursing orderly to receive, in some circumstances, more pay than a State-registered nurse working the same hours. Nor is it reasonable that a non-resident nurse working less than 40 hours a week should get her meals and uniform free, whereas if she works more than 40 hours she has to pay £30 a year for them. Nevertheless, negotiating machinery is necessary, and he hoped to see the weak spots in the Whitley council system strengthened.

Mr. S. G. HILL (superintendent of the General Hospital, Northampton) agreed that there were anomalies, but added that, in the health service, posts with the same name might vary very much in the demands they made on the officer holding them. He thought there was a case for making some posts "non-Whitley." He agreed that new employee organisations tend to go unrepresented on the councils.

Mr. BANGAY (clerk to the London Executive Council) deplored the lack of knowledge of conditions on the management side. The fact that the representatives on the employee side are all men may explain, he said, why women in the third grade get less money than men in the first grade. He suggested that some arrangement allowing for merit awards would be helpful. This idea was treated sympathetically by other speakers. Several, too, agreed with him that the employer side is often not well informed about conditions of service.

A speaker from the mental hospital service rated the councils with both humour and good humour for their dilatory behaviour, which, he said, is causing the wastage of 80% of mental nursing recruits and accounts for a deficit of 20,000 female and 8000 male nurses in the mental hospital service. At present one girl often has to look after 55 acutely ill mental patients. A male nurse, after qualifying, works for 9 years before he gets as much pay as a resident ward orderly; and a female nurse may work 8 years as a staff nurse before she gets a staff nurse's pay.

Sir ARTHUR HOWARD, chairman of the Whitley Councils, defended them as well as he could: the people who serve on them are not perfect and may not always make perfect decisions: there will always be anomalies; but the object is to satisfy members of the health service that they are getting justice; and in the main the councils are working well. Subsequent speakers mentioned several striking anomalies; and Mr. Johnson, in replying, summed up the rather disgruntled mood

of the meeting when he said that if the Whitley Councils did not represent an ideal hole, he at least didn't know of a better one.

USING MAN-POWER TO THE BEST ADVANTAGE

In the absence of Mr. H. A. GODDARD, who lately directed the *Nursing Job Analysis Enquiry* for the Nuffield Provincial Hospitals Trust, the third session was opened by Mr. P. H. CONSTABLE (house-governor to St. George's Hospital). Over 60% of the cost of the N.H.S., he said, goes on man-power, some of which is wasted in coping with obsolete buildings. We have too long based our policy in hospitals on opinion instead of facts. The nursing job analysis has given us facts, some of which are disagreeable. Many people find it hard to believe, for instance, that the end-result of nursing is administration. He quoted a *Lancet* editorial which summed up the position: "The student nurse is so little of a student and so much of a nurse for the same reason that the sister is so little of a nurse and so much of a clerk." Similar job analyses are needed, he said, in every branch of the hospital service. He suggested that the hospitals might themselves finance such studies.

Sir ZACHARY COPE (chairman of the Medical Recruitment Committee, 1952) advised using our facts with discrimination. We should gain some useful information, he thought, if hospitals would compare their volume of work, and the numbers of their staff, in—say—1938, 1945, and 1953. Such a comparison would show whether there had been too great an addition to cost, and could be made more cheaply than a job analysis. He mentioned Mr. Goddard's opinion that we have enough nurses to man all our hospital beds if they were properly distributed. But it would be hard to distribute them properly without direction, and rather than direct we must induce—by offering special advantages in those fields where they will not work at present. In outpatient departments, 75% of the work done by nurses could be done equally well by chaperons. He thought the medical staff would be intolerant of job analyses. The N.H.S. has inherited from the voluntary system the custom of appointing a consultant to several hospitals, often far apart, so that he travels long distances. Man-power would be saved if, in future, doctors were appointed to hospitals nearer their homes. Appointments systems, though laudable, have the drawback that they allow the consultant to limit the number of new patients he will see at a session; and some doctors are so conscientious about examining their patients that they find they can only see 3 or 4. In the old days the consultant saw all comers. Mr. Goddard, in the paper printed and circulated to the conference, said that the visiting teams of consultants sent out to hospitals by the Ministry could not expect, in the time at their disposal, to find out facts as effectively as a job analysis. He has taken part in the work of such teams, and believes they can be quite effective.

Miss HELEN M. KEYNES (St. Ebba's Hospital Management Committee) had found doctors ill company on committees because, she said, they seem to want to oust the committee and run the hospital themselves. Some other speakers seemed to have had similar experiences.

A member of the Scottish Dental Association said that neglect of children's teeth under the N.H.S. means increased expenditure later. Mr. A. ASHWORTH (Mansfield) deplored the General Nursing Council's policy of subordinating every other consideration to the student status of the nurse, thus making it very difficult for some hospitals in the provinces to staff their beds. Miss F. F. LILLYWHITE (G.N.C.) pointed out that the council is charged with the training of nurses and not with the staffing of hospitals; but Sir Zachary Cope rejoined that it is impossible in this instance to consider training apart from staffing.

Mr. W. S. WILKINSON (Secretary, Pharmaceutical Committee, London) mentioned the delays patients suffer because people will not take the responsibility for making quite trivial decisions—illustrating his thesis from the story of a prescription for a baby's truss which did not happen to be of the authorised size. He also pointed out how much time busy people nowadays spend on committee meetings, and on travelling to and from them. Here, he said, is another field for scientific study. Mr. COLIN ROBERTS (North Liverpool Hospital Management Committee) spoke of the saving possible on domestic work in hospital if the domestic staff are taught how to use the labour-saving devices provided, and if their health and welfare are supervised.

Mr. JOHN GRANT said that doctors employed in a hospital should not be appointed to the board of that hospital. This remark brought more applause than any other at the session—to the disappointment of Sir Zachary, who had never encountered any friction on his hospital board over forty years. Mr. Grant and other speakers favoured further job analyses in hospitals. Dr. GLYN HUGHES saw the force of not encouraging consultants to work too many sessions at hospitals too far apart, and thought that when the journeys became a burden to him some of the older man's appointments should be transferred to younger men. Nevertheless he thought it was important for general practitioners to keep the link with hospital consultants which such sessional visits provide. He agreed that outpatient departments should be used for consultative purposes, not for long-term treatment. He believed the visiting teams from the Ministry can do a good job.

Mr. CONSTABLE, in replying, remarked that the G.N.C. do, in fact, give very careful consideration to the difficulties of provincial hospitals over recruitment of nurses.

THE DRUG BILL

In a paper on the Medical Profession's Contribution to Economy in Prescription and Treatment, Dr. A. M. G. CAMPBELL (consultant physician to the United Bristol Hospitals) pointed out that the increased cost of prescribing could not be attributed solely to the fact that the State paid the bill; for the actual cost of drugs and dressings had risen fantastically during the past few years. In hospital the largest single item on the drug bill was antibiotics. At the Bristol Royal Hospital an economy committee, consisting of 5 members of the staff, including the pharmacist, reviewed expenditure each month, and they were trying to instruct residents and students in the economical use of drugs, especially antibiotics. They had installed diagrams and charts in the wards, showing the effective range of the drugs and pointing out their abuses; and members of the staff had helped in the preparation of a small booklet [1] on the use of antibiotics. On the question of proprietary and non-proprietary preparations, Dr. Campbell said that it was quite clear that in many preparations the *B.P.* compound was just as good, if not better, than the proprietary one, and very much cheaper. In Bristol the hospital pharmacists had been asked to dispense, wherever possible, *B.P.* drugs instead of proprietary preparations, unless specifically ordered by the consultant. Dr. Campbell suggested that the College of General Practitioners could profitably examine the question of economy in the use of drugs, and he hoped that the college would include, in its plans for research, trials designed to compare the results obtained with proprietary and non-proprietary drugs.

1. See *Lancet*, 1953, i, 837.

Dr. Campbell was unable to attend the conference to present his paper, which was introduced by Dr. H. L. GLYN HUGHES (senior administrative medical officer of the South-East Metropolitan Regional Hospital Board). Dr. Glyn Hughes thought that a consultative outpatient clinic should remain consultative and that the patient should not be referred to the hospital dispensary for his drugs.

In the matter of proprietary drugs, Mr. J. C. HANBURY (vice-chairman of Allen & Hanburys Ltd.), who opened the discussion, favoured a compromise between an absolute ban and a continuation of the present state of affairs. If non-proprietaries alone were permitted, many firms with low overhead charges, but not necessarily the best facilities for preparing drugs, would enter the market with cheap non-proprietary compounds. These might satisfy the letter of the law, but they could not be produced with that careful regard for detail that often had considerable effect on the ultimate therapeutic efficiency of a drug.

Dr. STANLEY THOMAS (a member of the Medical Practices Committee) disagreed with Dr. Campbell's view that the G.P. was influenced by postal advertisements to a greater extent than his hospital colleagues. Dr. Thomas had had letters from consultants which showed that he and they were receiving inspiration from the same piece of blotting-paper.

Dr. W. D. HOOD (senior medical officer, Department of Health for Scotland) thought that hospital pharmacists had a considerable part to play in the planning of more economical prescribing, and he suggested that their views should be sought more often.

Dr. TALBOT ROGERS said that though G.P.s were now being told something about the cost of prescribing they still did not know whether they were keeping in step with their colleagues in the same area. The General Medical Services Committee had asked for the restoration of areal averages, which would enable doctors to see how their own prescribing costs compared with the average for the area. But the work of pricing N.H.S. prescriptions had been considerably in arrears and it had not been feasible to undertake this additional task. The situation was now improving and it should be possible to start preparing areal averages next year. The intelligent use of these averages and the list of comparative costs that had lately been sent to G.P.s would be a considerable help in reducing the drug bill.

REGIONAL PLANNING

In his discussion of Medical Planning in the Regions, Sir FRED MESSER, M.P. (chairman of the Central Health Services Council), made some controversial proposals which drew surprisingly little return fire. The Ministry of Health, he declared, should not run the National Health Service: there should be a National Health and Welfare Board, something along the lines of the Central Health Services Council. This board should have the over-all responsibility for the administration of the service. Hospital regions should be reduced in size, and regional boards should have authority over hospital administration. Combined action by regional boards and local health authorities was often hampered by the present geographical arrangements, and it would be a great help if the regions were reconstructed to conform to the boundaries of a group of local authorities. Sir Fred also proposed the inclusion of teaching hospitals in the regional service; and he was anxious that the ambulance service should come under the control of the regional boards and not the local health authorities as at present. Since the start of the service, medical planning had progressed, but not in all sections of the service. The emphasis had been on the hospital service and not enough attention had been given to the preventive side.

Dr. T. LLOYD HUGHES (senior administrative medical officer of the Liverpool Regional Hospital Board) believed that regional planning had largely justified the claims that had been made for it, though certain circumstances still prevented the system achieving the benefits of which it was potentially capable. Among these circumstances he included the lack of unity, which was the result of the service's division into three parts, and the shortage of nurses and doctors, particularly of doctors for junior hospital jobs.

Dr. T. A. MORRISON (chairman of the Brighton executive council) put the point of view of the G.P. He thought that regional boards might be thinking in terms of hospital units that were too large; there was perhaps a place for smaller hospitals where the G.P. could treat his patients himself under the supervision of a consultant. He was critical of the school and antenatal clinics of the local health authorities; nothing was done there that the G.P. himself could not do.

Sir Fred Messer had referred to the difficulties that had arisen in coördinating the various parts of the service while its present structure was retained, and Sir ALLEN DALEY (formerly M.O.H. for the county of London) took up this point. In his view these difficulties were due more to lack of time than lack of inclination on the part of those who were helping to run the health service. There was certainly not an unlimited number of people able to give time to committee work, and more and more tasks became heaped on the willing horse. He agreed with Sir Fred that the present hospital regions were too few and too big; a teaching hospital should be associated with every region, but it need not necessarily be within the boundaries of the region.

International Congresses

PÆDIATRICS

THE Seventh International Pædiatric Congress was held in Havana from Oct. 12 to 17. It was preceded by the 22nd annual meeting of the American Academy of Pediatrics in Miami from Oct. 5 to 9, to which the European pædiatricians attending the international congress were invited.

The congress followed the usual system of plenary sessions and round-table conferences; and there was an excellent scientific exhibition, in which the displays on nephrosis, epilepsy, mucoviscidosis, and tuberculosis were especially notable. The plenary sessions were devoted to epilepsy, congenital heart-disease susceptible of surgical treatment, prematurity, the complications of primary tuberculosis, and problems of metabolism and nutrition.

The paper by Prof. STANLEY GIBSON (Chicago) on Eyes, Ears, and Hands in the Diagnosis of Congenital Heart-disease was a masterpiece of clinical observation, and Dr. HELEN TAUSSIG's review of the operations performed at Baltimore was on an equal plane.

Prof. CLEMENT SMITH (Boston) discussed the "hard core" of the mortality among premature infants; and Prof. ALAN MONCRIEFF gave a graphic account of the changes in the care of premature infants during the past twenty years.

In the session on tuberculosis it was encouraging to find that more and more authorities are abandoning intrathecal treatment in tuberculous and other forms of meningitis, and that isoniazid has worked greater miracles in childhood tuberculosis than it has in adults. Dr. EDITH LINCOLN (New York) discussed the effects of chemotherapy on the prognosis of primary infections, and Dr. BERNARD SCHLESINGER described the focal complications of the primary complex.

Of the twenty round tables the most popular appeared to be those on nephrosis, hæmatology, allergy, and virus

diseases. Professor Moncrieff was a member of the panel on respiratory diseases of the newborn, and Prof. Wilfrid Gaisford (Manchester) of that on B.C.G.

The congress was well attended: nearly two thousand members, from 47 countries, were present.

The next congress, in 1956, will be in Copenhagen.

NEOHIPPOCRATIC MEDICINE

FOUR hundred physicians from all over the world took part in the Second International Congress of Neohippocratic Medicine, held at Evian in the first days of September.

The congress began with the reading of the opening address of the president, Prof. M. H. LAIGNEL-LAVASTINE (Paris), who unfortunately was prevented by illness from being present. In his address Prof. Laignel-Lavastine pointed out that the term "neohippocratism," coined by A. P. Cawadias in 1919, did not signify a return to Hippocrates but an attempt to combine the scientific, analytical approach predominating in contemporary medicine with the synthetic, holistic, and constitutional approach of Hippocratic medicine.

The following conclusions were reached by the congress:

1. Internal medicine, and thus the internist, must take a preponderant place in medical practice. Specialties are necessary on account of developments in technique, but as disease is a total "psychosomatic" reaction, synthesis between the parts and the whole is necessary for a precise diagnosis.

2. Clinical observation must be reinstated as the most important factor in medical diagnosis, because only clinical observation, and the clinical critical spirit, allows the understanding of the patient as a whole; and thus laboratory signs are to be interpreted in the light of clinical observation.

3. Consideration of the constitution of the psychophysical personality of the patient, and his physical, social, and historical environment, independently of his disease, is of the greatest importance in diagnosis and treatment.

4. Parallel with the specific methods of treatment indicated by the particular disease, and developed in modern medicine, the constitutional Hippocratic methods adapted to the constitution of the patient, independently of his disease, should be applied.

A great part of the success of this meeting was due to the untiring energy of the secretary-general, Prof. Pierre Delore, of Lyons.

Parliament

Operations on Animals

IN the House of Lords on Oct. 27, Lord STAMP moved the second reading of the Protection of Animals (Amendment) Bill. He said he realised that obviously the measure could not go any further in the expiring session, but he hoped that the Government would take it up and give it their support in the new session or, failing that, a private member would reintroduce it. The main object of the Bill is to bring up to date the law concerning the use of anæsthesia in operations on animals.[1] Lord CARRINGTON, joint parliamentary secretary to the Ministry of Agriculture, said that while the Government supported the Bill in principle, they could give no undertaking that they could find parliamentary time to take it up.

QUESTION TIME

National Service Medical Boards

In answer to a question, Sir WALTER MONCKTON, Minister of Labour, said that he had visited a number of National Service medical boards, and had had discussions with chairmen of other boards and officials and had attended meetings of chairmen in all regions. These investigations had satisfied him that the medical men who comprised the boards were fully alive to their responsibilities. Nevertheless some errors in grading had occurred. Special investigation of cases brought to his notice, including those raised by hon. members since the end of June last, had revealed about 20 such cases, which was not a large number in relation to an annual rate of about 300,000 examinations. The most common factor resulting in a man being placed in too high a grade was the failure on the part of the man to disclose his full medical history; unless a man disclosed his full medical history, the board conducted his examination at a disadvantage. To correct this source of error the notice summoning the man had been revised and now advised him to bring to the board medical evidence of any past disabilities and ailments.

In a few cases there had been a lapse on the part of the board in applying the proper medical standards, and in other cases there had been clerical errors. The remedy for such mistakes was patient and constant attention to detail by the medical boards when applying the standards laid down. To help towards this the chairman would be relieved of any non-medical work which might be a distraction. To provide a further safeguard against errors, in future every man summoned to a medical board would be informed by notice that if he had reason to think that he had been given a wrong grading he might appeal in writing within fourteen days enclosing with his appeal any medical evidence he might desire to submit. Such appeals would be referred to the regional medical officer of the Ministry of Health for advice whether medical grounds existed to justify re-examination. Ordinarily any re-examination would be undertaken by a different board. Sir Walter added that nothing he had said should be regarded as a reflection on the manner in which the general body of chairmen and members of medical boards had performed their duties. Their task was not easy and he could assure the House that they had maintained the high tradition of their profession.

In answer to further questions, Sir Walter said he was keeping this matter constantly under review. He had not stopped examining cases and causes and would not hesitate to take what action he thought right. But in spite of the publicity the number of avoidable errors was very small.

Food-poisoning

Replying to Dr. BARNETT STROSS, Mr. IAIN MACLEOD, the Minister of Health, said that 300 outbreaks of food-poisoning in England and Wales had been notified to him between Jan. 1 and Oct. 21, 1953, by medical officers of health. The number of people affected according to the causal organism, type of food, and the place was as follows:

	Outbreaks	Persons affected
Causal organism:		
Salmonella group	117	2302
Staphylococci group	61	2118
Cl. welchii	11	461
Miscellaneous	14	134
Unknown	97	951
	300	5966
Type of food:		
Meat and meat products	109	2605
Fish and fish products	12	75
Duck eggs	12	15
Milk and milk products	20	1775
Miscellaneous	15	58
Vehicle of infection not established	132	1438
	300	5966
Place of outbreak:		
Hotels, catering establishments, &c.	24	292
Schools	28	1970
Factory canteens	17	467
Camps	2	181
Hospitals	16	405
Local authority institutions	3	319
At home	132	1418
Other places	12	470
Unknown	66	444
	300	5966

The White Loaf

In reply to Dr. STROSS, Dr. CHARLES HILL, parliamentary secretary to the Ministry of Food, said that precise information as to the response of the public to the availability of the white loaf would not be available until the December claims for bread subsidy came in from the bakers. It appeared so far that while there were many local variations

1. See *Lancet*, Aug. 15, 1953, p. 347.

the total transfer of demand from National to whiter bread was small. He had no doubt that the National loaf was the healthier loaf; what had been done was to give the public freedom of choice.

Flour Improvers

Dr. STROSS asked the Minister of Food when the use of agene as a flour-improver and bleacher would be discontinued; and what other substance would be used in its place.—Dr. HILL replied: Although good progress has been made the investigations are not yet complete. I hope, however, to be in a position to make a statement within the next three or four months.

Milk-borne Diseases

Replying to Dr. A. D. D. BROUGHTON, Dr. HILL said that 48% of the population of England and Wales, and 63% of the population of Scotland, resided in areas specified by Orders which had been made, or which were now laid in draft, before Parliament for the purpose of protecting the public against milk-borne diseases.

Royal Commission's Terms of Reference

Replying to a question, Mr. MACLEOD said that it would not be appropriate to extend the terms of reference of the Royal Commission on the laws relating to mental disorders to cover the law with regard to homosexual cases and their medical treatment. In so far, however, as they might be suffering from mental illness or mental defect, their position as regards certification, detention, and care would be covered in the same way as that of other persons so suffering.

Medical Services on Royal Yacht *Britannia*

Replying to a question, Mr. J. P. L. THOMAS, First Lord of the Admiralty, said that 200 hospital beds could be accommodated in the royal yacht; the estimated cost of supplying and equipping these beds and ancillary medical services was approximately £12,000.

Nurses' Pay in R.A.F. Tuberculosis Wards

Replying to a question, Mr. GEORGE WARD, under-secretary of State for Air, said that an extra 3*s*. a day was paid to nursing officers of Princess Mary's Royal Air Force Nursing Service below the rank of wing-officer when employed full-time on nursing pulmonary tuberculosis cases. Airmen on this work were given an extra 6*d*. a day, and airwomen an extra 5*d*.

Mr. P. F. REMNANT: Does the Minister deny that there are any special risks in serving in these wards on account of the precautions taken? Mr. WARD: There is no evidence that the incidence of tuberculosis among, for example, R.A.F. ward orderlies is higher than the incidence in the R.A.F. as a whole, and any extra risk is counteracted by the precautions taken.

Dr. EDITH SUMMERSKILL: Is the Minister aware that the younger these individuals are the greater is their vulnerability to this disease? Does he consider 5*d*. sufficient compensation for the risk these girls take? Mr. WARD: One test to which they are subjected before being allowed to undertake this work is the Mantoux test, which shows whether or not a person is liable to tuberculosis. Mr. A. WOODBURN: Is the Minister aware that the health authorities do not regard it as desirable that it should be suggested that the nurses in this type of nursing are open to any greater risk than they are in an ordinary accident ward, where a proportion of the patients may be suffering from tuberculosis, just as in tuberculosis hospitals? Mr. WARD: Yes, Sir. As far as the R.A.F. is concerned, our practice is in conformity with the practice in civil hospitals.

Myxomatosis

In answer to a question, Sir THOMAS DUGDALE, Minister of Agriculture, said that all reasonable practicable steps were being taken to stamp out the only two known outbreaks of myxomatosis that had recently come to light in Kent. Measures were also being examined for the protective inoculation of tame rabbits in case myxomatosis should spread. Future policy would be determined in the light of recommendations from the advisory committee which he and the Secretary of State for Scotland had set up and which is holding its first meeting next week.

The chairman of the committee is Lord Carrington, and the members include Dr. C. H. Andrewes, F.R.S.

In England Now

A Running Commentary by Peripatetic Correspondents

IN Cuba now—or at any rate a short while ago—the pædiatricians assembled for their international congress had castanets for breakfast and music most of the time. Since parliamentary government is temporarily suspended, the beautiful National Capitol in Havana was available for the main events of inauguration and registration. Conveniently across the road (crossed by keep-to-the-left motorists at great peril) was a modern, air-conditioned cinema which housed the main symposia by day and Charlie Chaplin in what was obviously the Spanish equivalent of *Limelight* by night. Projection was not always as good as might have been expected in a cinema, but the simultaneous walkie-talkie translation apparatus was mostly a boon.

Quite suddenly, so it seemed, it was decided one day to take all the congress (said by now to number up to 2000 with wives et al.) thirty miles to see a new orphanage-technical-school for the children of Servicemen. Coaches were to leave at 11 A.M.—well, 12 noon—but then there was a mass photograph, so we embarked about 12.30 and about 12.50 we were installed all along the charming sea front where the north wind of early winter was blowing spray on to the road. Finally all were assembled and off we went. In front two motor-cycles carried the Cuban equivalent of "traffic cops" with screeching syrens followed by the President of the Congress. Pot-holes added hazards to the early part of the journey, the principle being that it was stupid to repair them until the rains had really ended (? November). Yet marvellous new buildings had to be inspected on arrival while blood-sugars sank lower, and it was nearly 3 P.M. before we sat down to be waited upon in a vast dining-room by girl orphans who looked like a chorus from *Daddy-Long-Legs* or *Love from Judy*. Round-table study groups had been scheduled for 2 P.M. and many had been lured on the drive by the statement that they were to be held at the site of lunch, but this was cancelled, so all except those who attended the "Grand Council" were whisked back to town again, screaming past red lights—the syrens, not the delegates—for a late start. Unfortunately the "round table" included several members of the council and this group did not get going till next day, 27 hours and 20 minutes behind official schedule.

The local rum cocktail gave great pharmacological interest to the proceedings. One bar appeared to give these away at lunch-time, and many pædiatricians found they just could not compete with the bar-tender. There was a touching sight of a tough Texan (probably) staring sorrowfully at a row of drinks on which he was fighting a losing battle. At my hotel two drinks for the price of one encouraged the unwary to start at 5 P.M. One theory was that rum deadened the noise outside, which seemed unending, although a British pædiatrician awake at the uncomfortable hour of 4 A.M. asserted that it was quiet then. The famous Morro Castle (about the same age as the Royal College of Physicians of London) contained a working life-size model of the garrotting machine, and at least one member of the inspecting party left hurriedly as a voluble guide demonstrated its use.

* * *

I rush from my operating-list to the outpatients and then on to a ward round. But one of the joys of "the end in sight" is to relax with the last few patients and hear something of their views on life and their ways of living. My latest patient friend is a farmer and a cheese-maker who relaxed once too often in the presence of his bull. "This penicillin," he says, "may be a wonderful thing for me in here, but it costs me thousands outside. Now and then, and it is becoming an increasingly frequent occurrence, we find that thousands of gallons of milk won't make cheese. The 'starters' are not there, and it is all thanks to penicillin which is being used in the treatment of mastitis in cows." "What's the answer?" I ask him. He shrugs his shoulder philosophically. "At present none, but of course it isn't all waste. The milk is still fit for human consumption."

My tired mind goes back to the little boy I saw earlier in the day. He had osteomyelitis presenting with two

lesions, one in his femur on the right side and the other in his tibia on the left, and the organism has proved strangely confident in the presence of penicillin, despite the assurance of his family doctor that as far as he knows the boy has never had penicillin. I remember two other patients I have seen lately with multiple lesions and the little girl with the pyogenic abscess so chronic that it appeared almost a tumour. Perhaps the milk that has no "starters," but is fit for human consumption, fits into the jigsaw somewhere. No matter with what benevolent intentions we interfere with the balance of Nature, we do it at a peril.

* * *

Our tame psychiatrist refused the offer of a couple of goose eggs, but his small boy was persuaded by the gardener to put them under his bantams. The cock and his three hens got straight down to the job, never less than two of them sitting at any given time on the eggs till they were hatched. The cock, who took his fair share of the work of brooding, now proudly leads his wives and the two goslings round the garden. Surely an ornithological event of the first importance, and perhaps unique?

* * *

The placebo has been receiving a lot of attention lately, but no-one has mentioned what I call "placebo diagnosis"—the common everyday terms we use in a busy surgery. Two popular ones are:

Teething.—I may explain to a mother that her fretful child, who is not really ill, is teething. The mother, who really knew this all along, goes away happily, and no doubt gets on with the child better now she is sure what ails it. I know that no-one knows what symptoms (if any) teething causes. Some pædiatricians say it can cause none, while others say it does cause pyrexial illnesses that fall by crisis as a tooth appears. I had no trouble with my wisdom teeth, but I know doctors who do, and they firmly believe in painful teething. I just don't know who is right, but I go on using teething as a diagnosis. It satisfies the mother and when used wisely is harmless. No doubt it is sometimes correct.

The Change.—This is one I do not like, for what psychological reason I do not know. Again no-one knows what, if any, symptoms are caused by gonadal old age. If the symptoms do, not indicate disease we may perhaps accept the patient's diagnosis (though I never proffer this one myself). Œstrogens do help sometimes, though whether a placebo would I do not know.

Every doctor has his favourite diagnosis that in truth is not reasonable—catarrh, the monthlies, rheumatism, constipation, low blood-pressure, high blood-pressure, nerves, obesity, and dropped viscera. Psychoneurosis and teething I use, others still favour constipation or "grumbling appendix." Yet others go straight for glandular fever or brucellosis. But why, oh why does the patient seem quite content with the thought that he has a gastric stomach or a cardiac heart?

* * *

We were gently tossing in Charlie's 16-ft. motor-boat, whiffling up and down the bay for mackerel and pollack. It was a grey day at sunset, just the day to catch fish. We were using the new-fangled snare of 16 feathered hooks, with which we had done so well only the other evening. We were off the approved mark—Tonkin's Cellar Row—where last year we caught 3 four-pound pollack at one pull, and Roy had that fine sea bass. Despite all these propitious occurrences, we had no bite for the evening. Charlie's normally cheerful face was glum. "I reckon 'tis more comfortable at home, Ted"—unheard of sentiments from Charlie at sea. Then we saw an old whiskered face lift from the seas about a hundred yards from us. It was the seal that sometimes basks on Helzephron or Parc Vean beach, out fishing for his supper.

"Ah," says Charlie, "That ole seal's driven the fish away. We'll go down-along a bit." Sure enough, when we got down off Gwinian Point there were pollack thick and fast, and we had good sport. Now, what I want to know is, if the seal has this effect on the fish in his neighbourhood, how does he make his living fishing?

* * *

"Has the House Surgeon examined this patient, Nurse?"
"Yes, sir, he did a digitalis examination."
"Ah! with a foxglove I presume."

Letters to the Editor

VAGARIES OF INTELLIGENCE

SIR,—The pronouncements on the constancy of the I.Q. in your issue of Oct. 24 have been widely quoted in the press, and I should therefore be grateful if I might remove one or two misconceptions.

The criticisms of the I.Q. brought forward by the three young investigators whom you mainly quote are by no means as new as they suppose. Dr. and Mrs. Clarke declare that "the fact of I.Q. variability can no longer be disputed." But who has ever disputed it? In criticising previous views they refer, among other publications, to an L.C.C. report of my own, and add: "these investigators . . . rarely if ever submit their hypotheses to experimental proof." The report was first published, not in 1947, but in 1921. Results were then given for cases retested annually for 5 years, and I emphasised that the constancy of I.Q. "is but imperfectly realised." In later reports data were given for cases followed up for 25 or 30 years. The "experimental proof" of Dr. and Mrs. Clarke covers an average period of 2 years 3 months only.

In an earlier report (1917) I insisted that "for scientific work the employment of the standard deviation (or its equivalent—the percentile) seems indisputably the best device," and merely proposed a quotient or ratio because it could be rapidly calculated and seemed more intelligible to magistrates and medical officers. "The quotient," it was explained, "assumes as a first approximation that the changes in mean mental age and in the standard deviation are rectilinear, whereas in fact they are curvilinear." This simplification is the main (but not the only) cause of the inconstancy. Your contributors seem to be wholly unaware that psychologists, not only demonstrated the existence and amount of error to be expected, but showed how it could largely be corrected by adopting a more complex formula. This entails a statistical analysis of a rather elaborate type: the most recent suggestions will be found in an article by Dr. Fraser Roberts,[1] based on tests applied at Stoke Park Colony and the Royal Eastern Counties Institution. Every psychologist will therefore welcome what you say in your leader on the need for "publicising the value of statistical research."

One important cause of variation is not mentioned by your contributors—the fact that so many of those who employ (and criticise) intelligence tests have never been trained in their administration and interpretation. Dr. Tizard states that an I.Q. of less than 70 is very widely accepted as evidence of mental subnormality, sometimes on the basis of a single test. Presumably he is referring to the standard proposed for certifying special-school cases in the days when such cases had to be certified. Possibly some medical officers have relied on a single test. But no trained psychologist relies on tests alone—much less on a single test—in any doubtful case.

In your leading article you seem to confuse three different concepts that psychologists have carefully distinguished: first, the innate general cognitive factor ($_gv$); secondly, the estimates obtained for such factor measurements (g); thirdly, the vague qualities called "intelligence" in everyday speech. To prove that the last can be altered by education, or that the second provides only rough and fallible assessments, is not to demonstrate that the first—an entirely abstract and hypothetical component—is subject to variability. The psychologist, like the physicist, has adopted a popular word to avoid pedantic symbols and circumlocutions; but, in criticising what he says about "intelligence" as he has defined it, arguments based on some other interpretation seem (if I may say so) merely to confuse the issue.

University College,
London, W.C.1. CYRIL BURT.

1. Roberts, J. A. F. *Brit. J. statist. Psychol.* 1952, **5**, 65.

MILLI-EQUIVALENTS

SIR,—In articles, often by clinicians, I note the liberty with which certain blood components are expressed in milli-equivalents, yet other acid and basic radicals are referred to in a different value—e.g., grammes per 100 ml. or even as a "normality." Thereby the usefulness of the m.eq. expression as a convenient index in acid/base balance studies is lost; presumably the author only intends to convey the blood concentration of an element. The actual estimates of such substances (K, Na, Cl, &c.) by a laboratory are in terms of mg. per 100 ml., and—which is more important—replacement is by a grammes per litre solution.

In a recent authoritative paper a prescription for replacement therapy in cases of ileus is expressed in terms of both presentages and milli-equivalents. Surely, Sir, this makes for confusion and opens the door to serious dispensing errors.

True, by using a simple formula one method of expression is easily convertible to another, but for practical purposes it is surely more useful to retain mg. per 100 ml.—the form in which, I believe, most clinicians think, and of which they know the normal blood-levels.

Department of Pathology,
Dryburn Hospital,
Durham. J. E. ENNIS.

HYALINE MEMBRANE IN THE NEONATAL LUNG

SIR,—We must be grateful to your contributors who have recently established "hyaline membrane" in the lungs of the newborn as an important disease entity at long last. It is evident, however, that some issues, which probably could be solved, are still confused.

Dr. Emery (Oct. 24) must be correct in deprecating the application of either positive or negative findings in animal experiments to the human problem. The animal fœtus differs from the human in various ways, notably the lack of a comparable coating of vernix caseosa, and the absence of anæsthesia in the mother. The only satisfactory starting-point for experiments cannot be obtained—i.e., the human fœtus before it takes its first breath. I believe there are enough experiments unwittingly performed at cæsarean section to enable us to forget experimental animals—especially those in which the animals have been breathing air for quite a long time.

I do not share Dr. Emery's view that the hyaline membrane of the newborn is comparable with membranes developing later in life—e.g., in nephritis, rheumatic fever, and cardiac failure. The nearest approach I have seen was in a patient with extensive amyloid disease. It is this general (and I think erroneous) belief which has led to the disuse of the name "vernix membrane." While I do not suggest that "vernix membrane" is more than a part truth, it is a romantic name and the one I prefer. To me at least, "hyaline membrane" not only contains no truth at all but leads us along wrong lines in research. The Oxford dictionary states that "hyaline" means glassy. The membrane in question is seen in routine sections (hæmatoxylin and eosin) to be an opaque dirty red—not my idea of glassy. Because the name given to this membrane appears capable of arousing deep feelings I have suggested that we call it "alveolar-duct membrane," after its distribution. There appears to be general agreement on two points only—that it occurs in alveolar ducts and that it does not occur in stillborn infants.

There are three possible lines of inquiry, of which only the first lies predominantly with the pathologist.

(1) What substances unquestionably enter the bronchial tree in stillbirths? Here it is necessary to point out that, with few exceptions, "sudden death" does not occur at any stage of our intra- or extra-uterine life. The commonest "sudden death" is coronary thrombosis, but this is not really sudden in the sense that everything stops just as it was. I have, for example, never heard of an accident resulting from the "sudden death" of a car driver. Likewise, the fœtus dying in utero does not just stop suddenly at a particular point in its development. Whatever the cause, an asphyxial state develops. This leads to the inhalation, firstly, of those substances already in the mouth and pharynx, such as mucus and nucleated epithelial squames, and, secondly, of liquor amnii with its suspended vernix caseosa, epithelial squames, meconium, &c.

The amount of vernix entering the lungs is very variable, as might be expected from the variation in the amount seen on newborn babies. It may enter the lungs in two ways: firstly, as amorphous masses of vernix itself (I recently examined the lungs of a stillborn infant in which there were great masses of it in the alveolar ducts and alveoli, but this is exceptional); secondly, anyone who will examine a fat stain of skin from the groin and elsewhere will see that the epithelial squames are heavily coated with vernix, and that these squames are cornified and do not have a nucleus. I find it difficult to assess histologically the proportion of nucleated to cornified squames in the bronchial tree and alveoli, but my impression is that the former (of oropharyngeal origin) predominate. Some obstetricians insist that these oropharyngeal substances are very important in the production of alveolar-duct membrane. Mr. L. O. Watt evolved a technique for removing them from the upper air-passages of the newborn (especially after cæsarean section) and he believed this produced a much higher proportion of healthy babies.

Pathologists and pædiatricians must carefully consider the findings of the obstetricians, for I feel sure that it will be the clues supplied by the obstetricians which will finally solve the problem.

Originally, we thought the "vernix membrane" was entirely due to inhaled substances; now it is quite "low brow" to think these have anything to do with it at all. Surely the pendulum has swung too far. To me alveolar-duct membrane has a complex and variable composition; it includes mucins, fats, epithelial squames, and possibly unknown elements from the alveolar ducts and blood-stream. Blood elements do not appear to be essential because there may be a thick membrane with no œdema at all, and there may be gross œdema with or without membrane.

Dr. C. G. Paine is probably correct in stating that the fat content of the membrane decreases with the age of the baby. This may not be a fundamental observation because macrophages appear to attack fat before anything else. Vast numbers of squames may be inhaled without any membrane forming, and many membranes do not appear to contain squames. It is difficult to believe that the squames are an essential element of the membrane, partly because they enter alveoli so readily, unlike the alveolar-duct membrane.

It is interesting to see that Dr. Claireaux (Oct. 10) finds many nucleated squames in the deposit from the liquor amnii. It is possible that these are contaminants from the maternal cervix and vagina, and that the fœtus could not inhale them before the membranes rupture or until the head is in the vagina. It is difficult to tell vaginal squames from those formed in the oropharynx of the fœtus; they will not come from the fœtal skin. Whatever their origin, there is no doubt that nucleated squames do gain access to the fœtal air-passages and often, I think, outnumber cornified squames with no nucleus.

(2) I think it probable that the best line of inquiry is open to the obstetricians alone. In my early work on alveolar-duct membrane, I was surprised to find that it was a common cause of death in babies delivered by cæsarean section. This must eliminate vaginal nucleated squames as the cause of alveolar-duct membrane. Some years before he retired from the staff of the Derbyshire Hospital for Women, Mr. C. G. Lochrane was much concerned by the number of babies who died of this condition after cæsarean section. He discussed this with Mr. R. J. M. Jamieson (now his successor) and they concluded that the probable cause was the failure to deliver the baby before it had become appreciably anæsthetised or cyanosed. Mr. Jamieson was given the task of administering this type of anæsthetic and the deaths ceased.

Possible confirmation of this belief comes from Dr. Paine who tells me that, of many cæsarean sections performed under local anæsthesia at the Jessop Hospital for Women, Sheffield, none has produced a baby who has died from alveolar-duct membrane. If this is so, then surely it is a vital observation in explaining the cause of the membrane.

(3) The third profitable inquiry is indicated in the article by Mr. Donald and Dr. Steiner (Oct. 24)—an outstandingly

valuable study. I think that in time they will prove that alveolar-duct membrane is not always fatal. In the past, radiologists have made a definite diagnosis of broncho-pneumonia on the findings they describe. In some of these I have found a normal blood picture and observed a normal temperature chart. I have therefore concluded that they were cases of alveolar-duct membrane which recovered, though final proof was of course lacking.

I doubt if Dr. Steiner is wise to complicate the subject by including post-mortem pictures. Many of these will show œdema and not "collapse." The word "collapse" must be used with care because most of these lungs are not greatly reduced in volume. The reason for this is that the respiratory forces lead to much ballooning of the alveolar ducts when the alveoli can no longer expand and contract normally—an appearance often erroneously called emphysema.

I hope the work at Hammersmith will be continued indefinitely, so that it will be possible to obtain a very long follow-up in those cases of probable membrane which recover. It is at least possible that the ballooning of the alveolar ducts which occurs when a membrane is present will be followed by bronchiectasis in later life.

It is my belief that alveolar-duct (or hyaline) membrane is a lesion which is secondary to preventable causes. It is more than probable that if the obstetricians pooled their knowledge and experience we would soon know instead of guess these causes.

Derbyshire Royal Infirmary, Derby. G. R. OSBORN.

RESETTLEMENT OF DISABLED PERSONS

SIR,—Nobody in the medical profession has done more for the cause of rehabilitation and resettlement of the disabled than Sir Reginald Watson-Jones—as I know from personal experience.

When a representative of the Ministry of Labour states that we in this country are away ahead in the solution of this difficult problem, I think he has been allowed more than his quota of poetic licence. Ahead in social legislation perhaps; but in the general application of the principles of rehabilitation we can learn from other countries.

I have recently been the deputy director of the United Nations course on Rehabilitation of the Adult Disabled, held in Sweden, Finland, and Denmark. Some Scandinavian countries can teach us the integration and coöperation of government services, the medical profession, and the voluntary agencies. It is this very integration that is missing in this country. The unemployed disabled person is influenced by the Ministry of Health organisation whilst under medical control; by the Ministry of Labour when he seeks employment and re-training; by the Ministry of Pensions and National Insurance when he requires an invalid carriage or when his sickness benefit is not forthcoming; by the National Assistance Board when he requires extra help; by the Ministry of Education if he is an adolescent and needs further education. The various representatives of these official bodies give him conflicting advice. In addition, he is also influenced by trade-union representatives, lawyers, and well-meaning friends and relatives. He is also guided by the various voluntary agencies whose aims are to help the disabled. Can it be wondered at that during the period of his rehabilitation he is confused, anxious, and in the end, frustrated.

Rehabilitation, in my opinion, is a medical problem, because without good health we cannot have good industry. Resettlement is partly medical, and partly the province of the Ministry of Labour. Re-training must be controlled by the Ministry of Labour.

Is it possible for us to remove the patient from the realms of "power politics" and institute one authority, empowered to guide the patient into the safe harbour of gainful employment? I believe, if we spent less time in apportioning blame, and gave more thought to what is happening to the patient's morale, we should be rewarded by seeing disabled patients living and working happily—restored to life in its widest sense. That is our aim.

Garston Manor Rehabilitation Centre, nr. Watford, Herts. C. J. S. O'MALLEY Medical director.

CHILDREN IN HOSPITAL

SIR,—As one who has over the last thirty years been associated with work in children's hospitals, particularly orthopædic hospitals, I should like to endorse the views expressed by Dr. Mac Keith (Oct. 24) concerning children who require operative treatment.

Any attempt to bluff or deceive children is doomed to failure as they seem to possess a sixth sense by which they easily detect such efforts. Nevertheless, operations, and particularly orthopædic operations, can be very painful unless the proper preoperative and postoperative treatment is given, and I write to make a plea for the proper postoperative use of morphine for children.

It seems that in some quarters there has arisen a tendency to teach that morphine is dangerous for children; but I should like to record that after using it for thirty years according to the formula of age over age + 12, I have never had any anxiety. Not only is it not dangerous, but children in pain seem to thrive on it. After an operation, such as arthrodesis of the hip, the child who has had proper doses of morphine is found next day to have a good colour and to be comfortable; but when meagre doses of 'Nepenthe' have been given the child is pale and miserable.

With the proper use of morphine it is possible to assure a child unreservedly that he will not suffer much pain; and the child awaiting operation will have observed that his next-door neighbour who has already had his operation had quite a comfortable time of it. Under these conditions children fear operation much less.

Black Notley Hospital Braintree, Essex. M. C. WILKINSON.

SIR,—All who work with children will be grateful to Dr. Mac Keith for his article. One small criticism I would like to make is against the suggestion that, in preparing the child for entry to hospital for an operation, he should be given a mental picture of the operating-theatre and white-gowned nurses. Surely this is unnecessary since no child should be allowed entry into the operating-theatre while still conscious?

South Devon and East Cornwall Hospital, Plymouth. HUGH JOLLY.

INTRA-ARTERIAL TRANSFUSION

SIR,—Dr. Brown's article (Oct. 10) on intra-arterial blood-transfusion after controlled bleeding emphasises the advantage of the arterial over the venous route for transfusion in cases with prolonged hypotension and peripheral vasoconstriction after hæmorrhage.

While the radial artery is suitable for transfusion in cases such as his where the cannula can be tied in before vasoconstriction develops, the position is otherwise when the limbs are cold and exhibit severe vasoconstriction. In such cases difficulty in inserting a cannula in the radial artery, and in securing an adequate inflow of blood, has been reported.[1] Probably the chances of gangrene in the hand are enhanced in these circumstances, and the risk of this and other complications is by no means negligible. Thrombosis of the femoral artery has followed its use for transfusion,[2] so this route is not to be recommended.

Dr. Brown suggests use of the aorta as a last resort; but my experience indicates that no complications or difficulties attend intra-aortic transfusion when my special needle is used,[3] and therefore this should be the route of choice.

1. Porter, M. R., Sanders, E. K., Lockwood, J. S. *Ann. Surg.* 1948, **128**, 865.
2. Llaras, Xicluna, and Leca. *Afr. franç. chir.* 1949, p. 237.
3. Haxton, H. A. *Lancet*, 1953, i, 622.

The evidence from animal experiments and clinical trial is now overwhelmingly in support of intra-arterial transfusion as the only measure which will save life in cases where shock from hæmorrhage is of sufficient severity and duration. It is sad, therefore, to think of the many lives lost every year which could probably have been saved by this measure. It is surely not too much to hope that soon every hospital of any importance will have the equipment for intra-arterial transfusions and staff who are prepared to use it.

Crumpsall Hospital, Manchester. HERBERT HAXTON.

TATTOOS

SIR,—I have read with great interest your annotation last week on this subject. However, it surprises me that you do not accord to viral hepatitis a place in the list of potential complications of deliberate tattooing carried out for purposes of adornment.

Hobson et al.[1] investigated this question among patients in a military hospital in Hong-Kong—a group among whom tattooing was popular and viral hepatitis prevalent. They found that, out of 143 patients admitted with viral hepatitis during a certain period, no fewer than 56 (or 39·2%) had been tattooed between 51 and 150 days prior to the onset of the disease. As controls, they took 152 patients admitted during the same period for other complaints. In this group the number tattooed during the corresponding period was only 16 (10·5%).

They also describe the modus operandi of a local tattooist, their description lending eloquent support to the belief that the virus may be transmitted in this way.

Department of Pathology, Guy's Hospital, London, S.E.1. G. A. K. MISSEN.

TUBERCULOSIS

SIR,—May I answer the letters of Dr. Paul and Dr. Hoffstaedt (Oct. 10)? Perhaps our differences are not so great as they appear, although it is necessary to correct impressions that may have been given concerning the control of tuberculosis in cattle. It is true that bovine tuberculosis was virtually eradicated in the U.S.A. 23 years after the inception of a nation-wide campaign in 1917; but at that time the over-all incidence in adult cattle was only about 4%, compared with about 25% in Great Britain in 1935. Again, 16 years ago in Denmark 48·5% of all herds had been tuberculin-tested and 26% of these were free from infection. In Great Britain there was no effective scheme for the control of bovine tuberculosis until 1935, and owing to a Government decision no new attested herds were created during the war. In 1944 there were only some 600,000 cattle in these herds. By 1946 the number had increased to 1 million (about 13% of all cattle—i.e., roughly comparable with the Danish picture in 1937) and by 1952 to 3½ million. There are now some 4 million cattle in attested herds out of a total of about 9 million; so at the present rate of progress tuberculosis should be virtually eradicated in 10 or 12 rather than 34 years.

To suggest that injection of the B.C.G. strain of avirulent tubercle bacilli increases the incidence of bacilli in the population is rather like saying that vaccination increases the incidence of smallpox virus—although one admits that even this procedure has its opponents.

Dr. Paul still seems very unconcerned about the presence of virulent tubercle bacilli, and Dr. Hoffstaedt even suggests that it would be unfortunate if we attempted to "banish from our shores a virtually ubiquitous and mostly quite harmless germ." "Mostly quite harmless" seems a strange description to apply to an organism that, as Rich says in the last sentence of his book on *The Pathogenesis of Tuberculosis*, still kills more than twice as many people as any other single cause of death during the particularly productive and enjoyable period between the ages of 15 and 45. He points out that increased genetic resistance cannot possibly be the sole reason for the precipitous fall in the mortality-rate that occurred within a scant two generations. Even if it were entirely responsible, Sir Macfarlane Burnet[1] has indicated that it would take centuries before resistance fell to that of, say, the American Indian.

The elimination of most infectious disease doubtless tends to increase the susceptibility of the population, but few people think it desirable that we should continue to have a good infection-rate with such organisms as *Corynebacterium diphtheriæ* or *Treponema pallidum*. If it were desirable to maintain tubercle bacilli in the population there would, of course, be no reason at all for public-health doctors to worry about tubercle bacilli in milk; for, if one must be infected, the alimentary route is much less dangerous than the respiratory. Mr. L. Pitcher has devoted much energy to attempting to show that as one eradicates tuberculosis from cattle the death-rate from pulmonary tuberculosis increases. It is probably true that under certain conditions, which may have prevailed in Great Britain, tubercle bacilli in milk decrease the total death-rate from human tuberculosis,[2] but Dr. Daw[3] rightly questions Mr. Pitcher's arguments and asks for more evidence. One may say briefly that the mortality from human tuberculosis has continued to fall steadily in the U.S.A. since the virtual eradication of bovine tuberculosis. This is also true in Tasmania and in Queensland (an area mentioned by Mr. Pitcher as having a low human mortality and at one time high incidence of bovine infection). Above all, both human and bovine infection have been eradicated from the island of Bornholm.

I agree of course with Dr. Paul and Dr Hoffstaedt that a general improvement in living standards is probably the most important factor in reducing the mortality from tuberculosis. Various predictions that tuberculosis would become extinct by a certain date through the operation of such natural causes have however been falsified, and it is salutary to remember that only 53 years after syphilis appeared in Europe Fracastorius wrote: "Whatever may be the cause we must conclude that this disease has now entered its old age, and that the time is not far off when it will cease to propagate itself." As one would expect, the best results in the control of tuberculosis have been achieved where specific attempts to prevent the spread of tubercle bacilli have been combined with good living conditions, and the mortality-rate is now below 10 per 100,000 in Denmark and in certain States in the U.S.A., and is only 11 per 100,000 in Tasmania.

Dr. Paul suggests that I am confusing the eradication of tuberculosis with the eradication of the tubercle bacillus. In an essay on the Natural History of Tuberculosis Sir Macfarlane Burnet[1] wrote: "To prevent disability and death from tuberculosis the one outstanding requirement is to prevent primary infection with the bacillus." Or, as Sir John M'Fadyean wrote in 1901, "all efforts must be concentrated against the one great cause of the disease—the operation of contagion." Myers has said much the same thing on many occasions, but it would seem that the truth of these statements cannot be too often emphasised. Sir Macfarlane's essay no doubt influenced the scheme for the control of tuberculosis in Tasmania, and if he reads it Dr. Paul may discover some alternatives to the method of slaughter: incidentally we have eradicated tuberculosis from 40% of our herds without slaughtering, for this purpose, a

1. Hobson, A. C. S., Fraser, D. E., Newman, N. H. *Brit. med. J.* 1952, i, 1111.

1. Burnet, F. M. The Background of Infectious Diseases in Man. Melbourne, 1946.
2. Francis, J. *Lancet*, 1950, i, 34.
3. Daw, R. H. *Ibid*, 1952, ii, 1272.

single unoffending cow, although our failure to do so has annoyed a good many people.

When in 1895 the use of tuberculin had revealed the high incidence of bovine tuberculosis in Great Britain it was concluded that any attempt at eradication was quite impracticable. It was true that sudden radical measures were impracticable and nothing was done for some 40 years, during which time the incidence of infection remained nearly constant; but as soon as the community decided it would try to eradicate the bovine tubercle bacillus it was found that steady progress could be made, and eradication areas have now been established. I realise that eradication of human infection is a far more difficult and complex task, but let us agree that the presence of virulent tubercle bacilli in the human population is as undesirable as it is in cattle. It may then be found, sooner than some people expect, that improved living conditions allied with specific measures against the tubercle bacillus, which I am sure would have the support of Dr. Paul and Dr. Hoffstaedt, have reduced the incidence of infection to such a low level that virtual eradication is not an impossibility. It is a matter of fact that good progress towards eradication of the tubercle bacillus has been achieved in several communities without apparently exciting any serious opposition.

Veterinary School,
University of Queensland,
Yeerongpilly, Brisbane, Australia. JOHN FRANCIS.

CONTROLS

SIR,—It is a matter for regret that the use of normal children (or children suffering from some irrelevant disease) as controls in clinical research appears to be increasing.

No medical procedure involving the slightest risk or accompanied by the slightest physical or mental pain may be inflicted on a child for experimental purposes unless there is a reasonable chance, or at least a hope, that the child may benefit thereby.

If this is true—and I hope that there are few doctors in this country who would disagree—then it must surely be difficult to justify the use of two hydrocephalic infants reported in the paper by Dr. Doxiadis and his colleagues, and the use of a normal control by Dr. Bickel and his colleagues. Both papers appeared in your issue of Oct. 17.

It may be, of course, that there were some good reasons for the use of these children which have not been made clear. If so, the authors owe it to themselves to explain.

London, N.1. R. E. W. FISHER.

*** Dr. Doxiadis is now abroad, but we have shown the above letter to the other medical authors of the two papers. They reply as follows:

"It is quite reasonable that Dr. Fisher should raise the question of the use of normal children or children suffering from some irrelevant disease as controls in clinical research. There are extreme opinions on both sides, but I feel most of us adopt a policy between the two—somewhere in the grey between the rather theoretical white and black. My own working policy, which differs slightly from that expounded by Dr. Fisher in the second paragraph of his letter, is that no procedure should be carried out involving risk or discomfort without a reasonable chance of benefit to that child *or other children*; and this principle was followed throughout our work. The crux of the matter is contained in the last sentence of Dr. Fisher's letter—we owe it to ourselves to explain our actions. Surely we all weigh these matters most carefully in our own consciences."—K. S. HOLT.

"We are grateful to Dr. Fisher for raising a problem of which we are fully conscious in our daily work. Nevertheless, errors of metabolism constituting the underlying cause of many diseases cannot be understood or properly treated without knowledge of normal physiology. With regard to our own work, phenylalanine is an essential article of the diet, and Rose [1] recommends a daily intake of 2·2 g. Earlier work on normal adults [2 3] and on children [4 5] has shown that considerably larger amounts of phenylalanine may be ingested, as they are rapidly metabolised and cause no untoward effects. Our work was undertaken to observe the blood-levels of a normal child after doubling the normal phenylalanine intake in order to compare the normal tolerance curve with the pathological curve in phenylketonuria. This may be regarded as closely comparable with a glucose-tolerance test in that it is both harmless to the normal and of great importance for the assessment of pathological curves."—H. BICKEL, J. GERRARD.

BASIC GROUP PRACTICE

SIR,—We have followed, with great interest, the series of articles on general practice which have appeared from time to time in *The Lancet* under the name of Joseph S. Collings. We have been impressed with the tireless energy he has displayed in pirouetting round this country studying and reporting on individual practices and issuing reports on how general practice *really* ought to be conducted. Then we read in his article of Oct. 24:

"In its first five years the National Health Service has done little to stimulate the development of group practice. Hopes were centred at first on the possibilities of ill-defined and little-understood health centres; but these hopes have only been fulfilled in two or three places, and by now have lost their charm both for the general practitioner and for the Exchequer. They are monuments to the local authorities and the outcome of a 'do-nothing' policy in regard to the main structure of general practice."

Such ex-cathedra statements are rather mischievous, particularly when we know that Dr. Collings has never taken the trouble to visit the William Budd Health Centre in Bristol to find out what progress has been made.

If he is so ready to condemn health centres which as yet have had little chance of proving themselves, and even without any first-hand knowledge of how at least one of them is working, then we fear we must reconsider our judgment of the value of his previous articles.

R. C. WOFINDEN
Bristol. J. SLUGLETT.

PERIODIC MEDICAL OVERHAUL

SIR,—Sir Adolphe Abrahams generalises against periodic overhauls on the basis of three cases, although undoubtedly he could cite more. Surely no-one in medicine, least of all Sir Adolphe with his vast experience, would suggest that any examination, advice, or treatment was likely to be 100% successful in all cases.

What does Sir Adolphe mean by "sensible people"? As regards health, few people are sensible. Has he never met any people, even doctors, who have had headaches, indigestion, piles, or a cough for months and who have never done anything about it and eventually been found to be severe hyperpietics or to have inoperable carcinoma or advanced pulmonary tuberculosis? Admittedly many of these people would not have a periodic overhaul anyway, but the whole idea of such a check is to try and catch *some* of the early cases of tuberculosis, carcinoma, anæmia, hyperpiesis, diabetes, &c., explain what is wrong, and help them to be relieved or cured before they become invalids.

There are difficulties in that few, even intelligent, people will give the time to have an overhaul, or they are scared of the possible result; and the doctors in the National Health Service have not got the time or the facilities to do their job as they would wish.

1. Rose, W. C. *Fed. Proc.* 1949, **8**, 546.
2. Penrose, L., Quastel, J. H. *Biochem. J.* 1937, **31**, 266.
3. Jervis, G. A. *J. biol. Chem.* 1947, **169**, 651.
4. Woolf, L. I., Edmunds, M. E. *Biochem. J.* 1950, **47**, 630.
5. Levine, S. Z., Dann, M., Marples, E. *J. clin. Invest.* 1943, **22**, 551.

Those of us who have the time to take a proper history, carry out a detailed examination of the patient, and talk to him afterwards, know that hardly a day passes when someone is not found with some complaint which can be cured or at any rate ameliorated in its early stages and thereby save him a great deal of discomfort and possible anxiety in the future.

Finally, if not the doctor, who would Sir Adolphe suggest is the best person to give common-sense health education?

Hook, Hampshire. R. H. SCOTT.

POSTURE, BACKACHE, AND HEALTH

SIR,—In his letter of Oct. 17, Mr. Tucker describes an ideal posture and guarantees that if one learns to stand in this way *continuously* one never seems to grow tired. Many different postures have, in the past, been advocated as ideals and their theoretical mechanical advantages have been described, but, as far as I am aware, little practical evidence has ever been produced to show that any of them have, per se, any influence on the incidence of postural disorders of the supporting tissues.

Posture is the sum of the conditions pertaining at all the joints of the body. In the majority of those postures which are regarded as bad, poor, or abnormal, no joint is outside its normal range of movement. The crux of the matter therefore seems to be, why joint positions which can be utilised with impunity in some circumstances become fraught with danger to the joint tissues if utilised in standing.

Joint tissues, although they are living tissues, conform, in their reactions to stress to the same physical laws as inanimate objects such as steel or rubber. All the tissues which may be involved in maintaining the position of a joint—namely, bone, cartilage, muscle, ligament, and fascia—all these tissues are elastic to momentary stresses of a magnitude less than the breaking load: each is deformed when stress is applied to it and recovers its original dimensions when the stress is removed. On the other hand, these tissues react in a different way to *prolonged* stress. A stress which is less than the breaking load will, if it is allowed to persist for longer than an optimum time, produce a gradual progressive distortion of the tissues. Moreover, part of this distortion will be permanent unless it is slowly corrected by a vital reaction within the tissues.

In standing, the stress on any joint tissue is never as great as the breaking load, and it is therefore only the duration of the stress and not the stress itself—only the duration of the posture rather than the posture itself—which can cause permanent changes in the joint tissues. In other words a posture which is maintained continuously for a long time will damage the supporting tissues irrespective of whether it is regarded as an ideal posture or a bad posture, whereas any posture into which the body can be painlessly moulded will be harmless if it is of a short duration.

The work of Ingelmark and his colleagues [1] has suggested that the time factor may also be important in another way. They have produced considerable evidence in support of the hypothesis that the nutrition of articular cartilage and the production of synovial fluid are, in part at least, dependent on the rhythmical compression and release of articular cartilage. A corollary to this hypothesis is that continuous compression of articular cartilage by the continuous maintenance of any posture would adversely affect both these functions.

Observation of people in the street or of any person who is unaware that he is being watched shows that natural standing (in contrast to that of a soldier standing at attention) is never a continuously immobile act. A person stands still for a short time, then shifts his lower limbs, pelvis, and trunk before becoming still again for another short period, and this alternation between movement and immobility continues throughout the stance. The average duration of the immobile periods is only about thirty seconds.[2] Moreover, not only is the continuity of the stress on joint tissues repeatedly broken in this way, but different postures may be assumed during successive immobile periods, so that the tissues on the right and left sides of the body are alternately subjected to the greater part of the total stress.

Because the method of normal standing is so much in keeping with the physical properties and physiological processes of joint tissues, it seems reasonable to suggest that aberrations of the normal periodicity of standing might have a closer causal relation to postural disorders than the form of the various postures which are adopted during that act. It was observed in the course of the investigations quoted above that in a small proportion of the subjects studied each immobile period of standing was prolonged beyond one minute. I feel it would be of interest if the incidence of such habitual prolongation of the immobile periods of standing could be correlated with the incidence of postural disorders.

Anatomy Department, University of St. Andrews. J. W. SMITH.

1. Ingelmark, R. E., Ekholm, R. *Uppsala LäkFören. Förh.* 1948, **53**, 61; Ingelmark, R. E. *Acta orthoped. scand.* 1950, **17**, 303.
2. Smith, J. W. *Acta orthoped. scand.* 1953 (in the press).

COARCTATION OF THE AORTA

SIR,—We have read with great interest your excellent editorial (Oct. 24) on this subject, and there is one point upon which we should like to comment.

You say that direct aortography should always be used in the preoperative investigation of coarctation. This investigation, although undoubtedly more precise and informative than venous angiocardiography, is not without risk, principally because of the high concentration of dye which enters the cerebral vessels and the coronary arteries. In addition, the retrograde route involves the use of a peripheral artery, and intubation of the main artery to one upper limb, with the risk (admittedly small) of subsequent arterial thrombosis and ischæmia of the limb. Positioning of the catheter in the arch of the aorta is not as easy as it may sound, and in short the investigation is usually far more time-consuming, difficult, and hazardous than angiocardiography by the venous route.

In our experience, venous angiocardiography gives an adequate picture of the site and extent of the coarctation, of the aorta above and below, of the origin of the left subclavian artery, and of the collateral circulation in the majority of cases.[1] The risk is very small indeed, but sufficient contrast medium must be used (1–1·5 ml. of 70% diodone per kg. body-weight) in order to obtain a good result. We believe that aortography should only be performed in cases in which venous angiocardiography has been inadequate, or in which special problems of diagnosis exist, or when the surgeon expressly requests it.

Departments of Medicine and Radiology, Postgraduate Medical School of London and Hammersmith Hospital. J. F. GOODWIN, R. E. STEINER.

SIR,—You say in your leading article (Oct. 24) that no entirely satisfactory explanation has been found for the dilatation of the vessel so often noted distal to the constriction. You mention the defective structure of the aortic wall as a factor, but perhaps the most important cause of dilatation of this segment is the turbulence which must invariably be created there. While, from above, we have the blood passing through the narrowed part of the aorta under high pressure, below the constriction we find, as a result of the collateral circulation, a retrograde flow from the intercostal vessels into the distal segment, again at a pressure only slightly lower than that in the proximal part of the aorta. Even when the coarctation is complete, as it rarely is, the blood-flow from the intercostals into the aorta must create a considerable amount of turbulence, and it would be surprising if some dilatation did not result. The position

1. Goodwin, J. F., Steiner, R. E., Mounsey, J. P. D., Macgregor, A. G., Wayne, E. J. *Brit. J. Radiol.* 1953, **26**, 161.

might perhaps be compared to the post-stenotic dilatation associated with aortic or pulmonary stenosis, again probably the result of turbulence created in these vessels by the blood-flow through the narrowed orifice.

The late systolic murmur usually heard in coarctation of the aorta is often attributed to increased blood-flow through the collateral channels, and to kinking of these vessels. The murmur cannot be due to the blood passing through the constricted part, for obstruction may be complete at this point. That turbulence in the distal segment of the aorta plays a part in the production of this murmur seems likely, and it may indeed be the source of this characteristic physical sign.

Dublin. RISTEÁRD MULCAHY.

THE FACE IN DIAGNOSIS

SIR,—Mr. StKatsareas's article last week (p. 929) mentions an astonishing number of facial signs, but I venture to suggest that two or three more conditions, or causes of conditions, might be included.

A diagnosis of argyria of the face has sometimes been discounted because no possible cause for the deposit of silver could be found.

I remember an instance in question: a young woman, and her doctor, were unaware of any possible cause for the pigmentation (a biopsy of the skin had not been made) until the patient produced an old prescription from another doctor who had ordered pills containing silver nitrate for her "indigestion." So successful were the pills that the patient continued to take them whenever she had indigestion. Other similar cases have probably occurred from time to time.

A case was shown at one of the annual meetings of the British Association of Dermatology in which there was considerable facial pigmentation of the argyria type, but no possible cause could be found. My attention had recently been directed to the occasional occurrence of facial argyria due to the use of a lotion containing 'Argyrol' for the treatment of sore throat. The general public was not aware, at that time at any rate, that argyrol was a silver preparation. On questioning, the patient admitted that he had been using a mouth wash or gargle for the throat. His doctor wrote to me a few days later to say that on going further into the case he had found that the patient had used a prescription containing silver nitrate.

A number of other conditions might be included.

There is a possibility of pigmentation of the face being caused by the internal use, not of silver, but of bismuth.[1]

If facial jaundice is included I think that yellowness of the face due to hypercarotinæmia might also be mentioned. In this condition the sclerotics do not share in the yellowness as they do in true biliary jaundice.

Unequal pupils resulting from neurosyphilis are, of course, mentioned among the important facial signs. But the unequal pupils forming a part of Adie's syndrome (or Markus's syndrome) [2] have not been included.

The "ecchymotic mask," due to accidental violent compression of the chest wall, is beautifully illustrated in French medical literature. If the patient survives, I believe the facial ecchymoses completely disappear.

Methæmoglobinæmia or sulphæmoglobinæmia sometimes give a ghastly tinge to the face, but these conditions are not often encountered.

The telangiectases of the Rendu-Osler type of telangiectasia may not be obvious in some cases.

In characteristic examples of Bourneville's disease (tuberous sclerosis) the tell-tale so-called Pringle's nævi (telangiectatic sebaceous adenomata) grouped about the nose are very striking.

The combination of the facial vascular nævus with buphthalmos ("ox-eye") on the same side and hemiparesis on the opposite side of the body is seen in classical examples of the Sturge-Weber-Kalischer syndrome.

A scar in the parotid region associated with flushing and sweating on eating on the same side of the face is the least uncommon type of the "auriculo-temporal" and allied syndromes.[3]

1. Parkes Weber, F. *Brit. med. J.* 1939, ii, 466.
2. Parkes Weber, F. *Proc. R. Soc. Med.* 1933, **26**, 60.
3. Parkes Weber, F. Rare Diseases and Some Debatable Subjects. London, 1946; pp. 59, 66.

The presence of even the slightest xanthelasma of the eyelids may, I think, sometimes have an important significance, because of its occasional association with xanthomatosis of other parts of the body and with grave atheromatous lesions of the cardiovascular system.

London, N.W.1. F. PARKES WEBER.

SIR,—As a non-medical reader of the *Lancet* I feel impelled to congratulate you upon Pierrhos StKatsareas's article, which has the true note of Sir Thomas Browne in many sentences. But alas! that you should speak of Alemene's nights instead of Alcmena's. True that mean ale may make for misery, but I believed that you knew Sir Thomas Browne by heart.

London, S.W.1. F. SHERWOOD TAYLOR.

SPUTUM IN CHRONIC BRONCHITIS

SIR,—We should like to comment on the article by Dr. Elmes and his colleagues last week.

In hospital we see, for the most part, the patient with complicated chronic bronchitis. By that is meant chronic bronchitis with emphysema, with right ventricular hypertrophy, with congestive cardiac failure, with cerebral anoxia, or in patients acutely ill from a respiratory infection. In other words, we begin and end with a respiratory cripple, unemployable or only employable in a limited capacity. Dr. Elmes's cases are no exception.

To pursue the prophylaxis of acute respiratory infections in chronic bronchitis, one would have to enlist the aid of the general practitioner, who sees bronchitis in its early stages. The College of General Practitioners could, with outside expert help, tackle this most important problem. The general practitioner in an industrial area (where bronchitis is most prevalent) is very busy in the winter, so the antibiotic would have to be given by mouth; and here we would plead for chloramphenicol, which is condemned by Dr. Elmes and his colleagues. We have used it ever since it became available and have not encountered any toxic effects. We give it in divided doses of 2 g. daily for not more than six days. Its effect in clearing *Hæmophilus influenzæ*, the really awkward infection in our experience, is dramatic. We are sure that it has been responsible for saving many lives. It does occasionally produce diarrhœa, but this seldom lasts for more than twenty-four hours. Aureomycin, on the other hand, can cause distressing diarrhœa, and for this reason we have abandoned its use unless it is specifically indicated.

We wonder whether respiratory infections are a major factor in making a respiratory cripple of a chronic bronchitic. What about cough and smoking? Is not a mucoid sputum with its attendant cough more injurious over the years than respiratory infection each winter? These infections do not usually, by themselves, cause death until later in the disease, when the patient no longer has uncomplicated chronic bronchitis. In our efforts to eradicate the pathogens from the respiratory tract, it would seem probable that, in the course of a time, the bacterial world will develop a new armour and we will be caught up in the endless game of antibiotic versus bacterium. Therefore, whilst not denying that the prophylaxis of the respiratory infection in chronic bronchitics is a most desirable objective, surely we must, if we are to produce any lasting benefit for these patients, concentrate more on the origin, social aspects, and morbid anatomy and histology of the disease. We might then be able to define what we mean by chronic bronchitis!

Finally, we should like to congratulate Dr. Elmes and his colleagues on their thoughtfulness in selecting patients who "could attend daily without financial loss." The chronic bronchitic comes mainly from the lower-income group, and in our clinic we make sure that pay is not lost because of the visit.

Chase Farm Hospital, Enfield, Middlesex. THOMAS SIMPSON
E. K. WESTLAKE.

GASTRIC RESECTION FOR HÆMORRHAGE

SIR,—Mr. Gordon Ferguson (Oct. 10) raises the problem of the correct procedure when no cause is found at laparotomy performed for recurrent hæmatemesis and melæna. These cases are usually due to acute gastric ulcers which are impalpable at operation. The follow-up of acute gastric ulcers, causing bleeding and diagnosed gastroscopically, gives a clue to the best surgical procedure. In men there is a big proportion who subsequently return with chronic gastroduodenal ulcers, and partial gastrectomy is therefore reasonable at a time of brisk and repeated bleeding when no obvious cause has been found; but the surgeon is well advised to inspect the remaining part of the stomach before completing the operation. In women the follow-up of acute ulcers is excellent, few returning with chronic ulcers, but there may be further episodes of bleeding.[1]

We believe the best procedure is that described by Mr. G. L. Bohn, of Reading. He opens the stomach and not only inspects the mucosa for the acute ulcer but palpates for the exposed vessel which may feel like a small hard shot through the rubber gloves. Having located the vessel, he then performs an intragastric submucosal resection of the ulcer. In this particular group of patients, we think this is a very valuable technique. Where available, gastroscopy can be a real help in locating small bleeding ulcers in cases which may require surgery. Bleeding tends to recur at intervals of 12–24 hours, and it is sometimes possible to choose a time when bleeding has stopped and when the stomach is empty.

Department of Gastroenterology, Central Middlesex Hospital, London, N.W.10. F. AVERY JONES J. W. P. GUMMER.

SIR,—In his article on gastric resection for gastroduodenal hæmorrhage without an obvious ulcer, Mr. Ferguson mentions the inadequacy of the inspection of the stomach made possible by gastrotomy.

May I, in this connection, recall that many years ago Rovsing, in Copenhagen, on such occasions used the simple expedient of introducing a small lamp through the gastrotomy and inspecting the transilluminated stomach wall. He stated that by this means the bleeding vessel could be easily found by the interruption in its course, which could be clearly seen. He became cautious about the procedure because of some accident with an electrical short-circuit; but this should be avoidable with modern equipment—possibly low-voltage lamps.

Berne, Switzerland. P. LUNDSGAARD-HANSEN.

Medicine and the Law

Professional Negligence: An Unsuccessful Appeal

LAST March a widow was awarded damages in her action against two dental surgeons on the ground that their negligence in the professional treatment of her husband had caused his death. One of the defendants extracted teeth from the patient's mouth while the other administered the anæsthetic. Somehow the patient swallowed or inhaled a throat pack which had been inserted in his mouth, and asphyxia resulted. At the trial the judge took the view that the facts indicated negligence and that it was for the defendants to rebut that indication. The Court of Appeal has refused to interfere with his decision.[2] The appellants contended that the occurrence was an unfortunate mishap of an extremely rare kind which could not reasonably have been foreseen; the fact that it happened was no proof of negligence. Lord Justice Somervell rejected this contention. It had been argued, he said, that the two dental surgeons had followed the usual practice of their profession and that a series of highly improbable coincidences had caused the patient's death. But there was ample evidence to support the finding reached in the trial court that the throat pack had been too short. This, said the Lord Justice, called for an explanation and the defendants' attempted explanation had largely broken down. Lord Justice Denning, concurring, said that the accident was one which could and should have been avoided; the fact that a similar accident had never happened previously was really something which told against the defendants. The appeal was dismissed and leave to appeal to the House of Lords was refused.

It is familiar law that a medical or dental practitioner, while he owes the duty to use reasonable skill and care, does not guarantee successful treatment any more than a lawyer guarantees to win his client's case. He is not responsible for an accident which could not reasonably have been foreseen. Where the line should be drawn—what degree of care and skill is reasonable—is a question depending on the circumstances of each case. The ruling of the Court of Appeal, disturbing though it may appear, need not be taken as altering the general principles of professional liability. What is negligence and what is an accident will still have to be decided in the light of the particular facts established in evidence.

1. Jones, F. A., King, W. E. *Ann. Aust. Coll. Phys.* (in the press).
2. *Times*, Oct. 31, 1953.

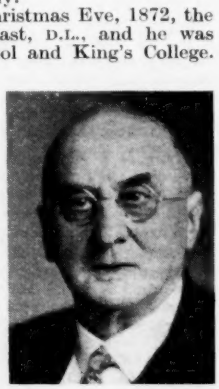
Obituary

WILLIAM NORWOOD EAST

Kt., M.D. Lond., F.R.C.P.

Sir Norwood East, a former Commissioner of Prisons and a director of the Prison Medical Service, died at his home at Crowthorne, Berks, on Oct. 30. He retired from active work in the prisons in 1938, but his colleagues will find the Prison Medical Service strange without him, for he had never ceased to attend conferences, both formal and informal, and they had continued to rely on his wisdom, experience, and sympathy.

He was born in London, on Christmas Eve, 1872, the son of Mr. W. Quartermaine East, D.L., and he was educated at King's College School and King's College. He qualified from Guy's Hospital in 1897, and two years later he joined the Prison Service as a medical officer. He held appointments at many of the larger prisons before he was appointed senior medical officer at Brixton Prison in the early 'twenties. The work of a senior medical officer at Brixton involved spending many days in court, not only at the Old Bailey but in assize towns in the Home Counties. Much of the day-to-day work at the prison had to be done in the evenings after return from court, but East never spared himself. His reputation as an expert witness stood high, and he would spend long hours taking a history from a man on whose mental state the court had asked for a report.



[*Stoneman*

In 1924 he became Medical Inspector of Prisons, and he brought to the Prison Commission administrative capacity which has seldom been equalled. He secured the provision of an up-to-date operating-theatre in Wormwood Scrubs Prison, so that major surgical operations could be carried out within the prison; and he started the prison nursing service with State-registered nurses. He became a Prison Commissioner in 1930 when he was also appointed director of the Prison Medical Service.

Retirement in 1938 brought him little relaxation from his hard work. He continued to be one of the doctors appointed by the Home Secretary to inquire into the mental state of prisoners on whom the capital sentence had been passed. These inquiries often involved long journeys at short notice with an exacting and responsible duty at the end of the journey. He also continued to

lecture in forensic psychiatry at the Maudsley Hospital Medical School.

He was an effective and lucid speaker and an active member of the societies of his specialty, and in due course he presided in turn over the Society for the Study of Inebriety and Drug Addiction (1940–45), the psychiatric section of the Royal Society of Medicine (1943), and the Medico-legal Society (1945–47). In his books and essays East also made a remarkable contribution to his specialty. *Forensic Psychiatry* (1927) is a useful guide to doctors called to give evidence in the courts on mental diseases. *Medical Aspects of Crime* (1936) is a collection of thoughtful essays. In *Psychological Treatment of Crime* (1939) he and the late Dr. W. A. de B. Hubert described their investigation into the psychological treatment of criminals and recommended that a special establishment within the Prison Service should be provided to deal with psychopathic personalities and other psychiatric cases. One of the last occasions on which East attended the Prison Commission was at a meeting to discuss the planning of this establishment. But the start of this project has been much delayed by post-war conditions. *Society and the Criminal* (1949) is another collection of essays which he described as "some of the stepping-stones over which I have travelled towards a better understanding of crime and criminals."

J. C. W. M. recalls that East came as senior medical officer to Brixton Prison from Liverpool Prison with the reputation of being a formidable personality and a hard worker.

"We juniors were told we were in for a strenuous time under him. We found him strict but fair and without doubt a tremendous worker. He helped and encouraged us all he could and from him we learned much. Many young medical officers owe their successful careers to him, and I, who had the privilege of succeeding him as medical commissioner, know it was not only his colleagues he helped. Many ex-prisoners owe a great debt of gratitude to him, for he was blessed with sympathetic understanding of their weaknesses and difficulties, and helped many to overcome them. At the end of his last book, he bids those who follow to 'be faithful to scientific standards and earn the respect of his colleagues.' East was certainly faithful to scientific standards and he earned the respect of his colleagues."

A. J. L. writes: "Norwood East cannot be replaced. His psychiatry, like his social and moral convictions, was solid and simple, free from the complex uncertainties that now harass us.

"This simplicity was not the outcome of unawareness or any defect of penetration and grasp. With an unrivalled body of experience at his call and an exceptional knowledge of the literature of his subject, he could give a sure empirical judgment on any practical question of forensic psychiatry and a wisely critical survey of theoretical issues such as culpability. His unassuming integrity, sense of duty, and outspoken opinions went with a humane regard for individuals and a concern for their betterment which was reflected in his advocacy of the therapeutic penal institution. He had no time for cant or sentimentality, he detested vapid excuses for criminal behaviour, and he had a strong sense of things possible; but he fought with courage and determination for what he thought should be done to improve our understanding of the delinquent and our capacity to help him. His research was characteristically thorough and cautious; his teaching, like his conversation, pithy and unequivocal. About the research he was needlessly modest; his contribution to the study of adolescent offenders is a monument that will stand. Teaching gave him keen pleasure, and he prized the opportunity greatly. During the thirty years he lectured at the Maudsley he was unremitting in attendance and careful preparation; he gave his last series of lectures only five months ago and was lucid and vigorous as ever, with his extraordinary case memory fully at his disposal.

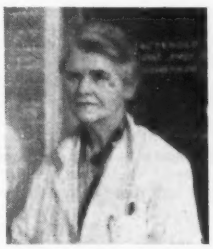
"Looking back, one recalls his slightly formal courtesy, his humour, his genuine respect for the work of others, and above all his outstanding honesty of mind and steadiness of purpose. 'Whose life was distinct and in Method, and his Actions as it were cast up before. A man firm and standing in his purpose, nor heav'd off with each winde and passion; one that thinkes what he does, and does what he sayes, and foresees what he may doe, before he purposes. A man well poys'd in all humours, in whom nature shew'd most Geometry, and he has not spoyl'd the Worke.'"

EMMA CHRISTINE PILLMAN-WILLIAMS

M.B.E., M.A. Camb., M.B. Lond.

Mrs. Pillman-Williams, chemical pathologist to the Royal Free Hospital, died at her home in London on Oct. 28.

She came of an old Devonshire family, and she was educated at Sidcup and Blackheath High Schools and at Girton College, Cambridge, where she took the natural sciences tripos, specialising for her part II in physiology. From Cambridge she went in 1910 to the London School of Medicine for Women. After qualifying in 1914 she held house-appointments at the Royal Free Hospital, where she later became assistant anæsthetist. In 1916 she was seconded to the Ministry of Munitions as chief medical officer at No. 7 Filling Factory. Here she collected the material for her first paper, which dealt with the aplastic anæmia developed by trinitrotoluene (T.N.T.) workers. For her work at the factory she was appointed M.B.E.



In 1919 she returned to the Royal Free and its medical school, and she worked there till 1923, with a grant from the Medical Research Council, on the chemical changes in blood and urine during pregnancy. The importance of these early investigations, and indeed of much of her later work, was not fully appreciated, for she had little gift for exposition and would sum up the research of years in a paper so condensed that it was barely comprehensible. From 1923 to the outbreak of the late war she worked in what became the chemical pathology department of the hospital. During this time her interest turned more and more to nutrition and dietetics, and with Dr. Dorothy Hare she studied the treatment of rheumatoid arthritis by a diet of raw fruit and vegetables with first-class protein and some fats. A film showing the remarkable improvement obtained in some severely crippled patients is still in existence, but here again a full account of the investigation was never published. Mrs. Williams was an advocate of this diet for people in general. From their early youth her family was brought up on a modification of it, largely prepared by her own hands, and the physique of her sons in her opinion put Q.E.D. to her theories of dietetics. She was a staunch and critical supporter of the Food Education Society.

During the late war she was on whole-time service at the base hospital of the Royal Free at Arlesey, but she returned to London in 1946 and was appointed senior lecturer in charge of the department of chemical pathology, a post which she held at the time of her death.

L. W. writes: "I came late to medicine; and it was as a student that I first appreciated Christine Williams's outstanding characteristics—her all-embracing kindness and her interest in her fellow men. It was only her incredible energy and her will-power that enabled her to pursue her career while bringing up her family of four outsize sons. With her Swiss Family Robinson bag, Piller, as she was called by her friends, was an essential part of the hospital; colleagues, residents, nursing staff, students, patients, all came to her for help and she never failed to respond. For every ill there was always a vitamin! She kept open house, first at Cumberland Terrace and later at Harley Street; a party of fifty lads for the night was taken in her stride. At Arlesey her hospitality, her personality, and her determination to get on with the job did much for the morale of staff and students alike. Her patients adored her and would report for years after their discharge, knowing that help and advice would be theirs. In fact everyone came to Christine, and I used to describe her as the most imposed-on individual in the hospital. Generous to a fault, she would cheerfully give her all and go hungry and in rags. In her youth she was fascinating and pretty with a milkmaid's complexion; in later life she still charmed in her famous twenty-year-old Paris hat."

In 1919 she married Dr. Ulysses Williams, radiologist to the Royal Free Hospital. There are four sons of the marriage.

Notes and News

FROM CARE TO CURE

ON Oct. 28 the Duke of Edinburgh visited Goodmayes Hospital, Essex, to see something of its work. Speaking at a luncheon afterwards he said: "This hospital interested me as an individual, because it is seeing what is really the beginning of a revolution—the revolution from care to cure .... It strikes me that it must be a source of very great satisfaction to doctors and nurses in this service to know that they are making or doing a positive good in the healing of the mentally sick. This is a satisfaction which the rest of the medical profession have had for a very long time but which for the mental health service has only really begun to start."

Mr. Iain Macleod, the Minister of Health, said that when it was known that the Duke of Edinburgh wished to visit a mental hospital it had seemed sensible to invite him to one where the staffing situation came somewhere between adequate staffing and an acute shortage; to choose a hospital where overcrowding was neither negligible nor formidable. They wanted to show him a hospital where good work was being done in old buildings. Goodmayes was typical of many other hospitals of this kind—neither the newest nor the oldest which were "the county regiments of the Army" of those who served in the mental-health field.

THE HOSPITALS YEAR BOOK

FOR a reference book familiarity breeds affection rather than contempt, and friends of the *Hospitals Year Book* [1] will be glad to find the 1953–54 edition its usual informative self. But Mr. J. F. Milnes, the editor, shows discrimination in his respect for tradition and he has sensibly dropped the detailed bed and patient statistics, now largely available in the Ministry of Health's *Annual Review of Hospital and Specialist Services*. Thanks to this saving of space he is able this year to give us details of mass-radiography units, and to provide a separate index to special hospitals. The index to statutory instruments, memoranda, and circulars has been expanded to include N.H.S. Whitley Council circulars and there is also a short bibliography of books and reports about hospitals.

SURVIVAL OF CASTAWAYS AT SEA

IN peace-time 50,000 persons a year die as castaways, 90% of them from despair in the first three days. Dr. Alain Bombard [2] believed that a castaway need not die of hunger ("there are nearly two hundred times as many living organisms in a cubic foot of water as in the same amount of earth"), or of thirst (provided his kidneys are healthy an average man can drink with impunity $1^1/_2$ pints of sea water a day), or from despair (because survival is feasible). He read all he could about shipwrecks, the experiences of survivors, the chemical composition of fish and how to catch them, and winds and currents, and he experimented with plankton for food. He then set out to prove his case.

After a preliminary canter in the Mediterranean Dr. Bombard drifted alone for 65 days in an 18-ft. inflated rubber dinghy from the Canaries to Barbados. For vitamins A, B, and D he relied on fish, and for vitamin C on plankton. For water he used the sea and pressed fish. He took emergency rations but never opened them. He took no sun-glasses, but he did take a sextant, fishing tackle, a small parachute to serve as a sea anchor and as a net for plankton, and a small sail, whose most useful functions were catching the rain and acting as a shelter from the sun. He recorded daily his blood-pressure, his temperature, and the state of his skin, nails, hair, and mucosæ; he measured his urine, and noted his muscular strength and the number of stools passed. Among other discoveries he disproved the fallacies that there are no fish away from inshore waters and that sea water is laxative. After a month or so enteritis set in, but after 53 days he met a liner and had a small meal, which gave him the worst stomach trouble of the whole voyage but apparently cured his enteritis. During the voyage his blood-pressure varied with his state of mind, both being depressed together; the meeting with the liner restored both to normal. After leaving the liner he continued for another 12 days before landing in Barbados. By this time he had lost 55 lb. in weight and 2,500,000 red cells per c.mm. of blood, but he showed no signs of vitamin deficiency.

It may be objected that whereas Dr. Bombard was already used to roughing it at sea, other castaways might succumb to seasickness or be otherwise incapable of keeping themselves alive as he did. But by enterprise and endurance he has made his point and has made it in a way that must cause more attention to be given to the needs of survivors from shipwreck.

1. Published by the Institute of Hospital Administrators, 75, Portland Place, London, W.1. 1953. Pp. 1088. 42*s*.
2. The Bombard Story. André Deutsch; London. 1953. Pp. 214. 12*s*. 6*d*.

BEER BY THE REED

SOME take their vitamin B in wholemeal bread, some in the husks of their rice; some buy it in a pot or a packet and have it for breakfast; but the 16,000 inhabitants of Ukara Island, in Lake Victoria, take it as—and at—a beer drink. The island measures 30 square miles, and when someone decides to hold a beer drink everybody, in theory, can come. Fortunately only about 200–400 of the nearest neighbours usually turn up.

Dr. Hope Trant, who describes one of these social occasions in the East African Medical Survey Annual Report [1] for 1951, says that the men arrive first, usually at about 4 P.M., each carrying a drinking reed, and most of them bringing their own stools. Those without stools look round for stones to sit on, if necessary supplying themselves from the loose foundations of the huts. Meanwhile the men of the household which is offering the beer are boiling up water in large aluminium saucepans, called sufurias, which have been used to make the porridge for dinner. They have not been washed since, so the water is nourishing and scummy.

The beer itself is already prepared and stands waiting in large earthen pots. The recipe for brewing it is lengthy, complex, and by our standards original.

> First take a measured quantity of red sorghum (Guinea or Kaffir-corn) and put it in a large wooden trough; add water and soak for eight hours. Mix with ashes and spread on a flat rock; cover with grass and leave for 1–2 days to germinate. When sprouting begins, wash to remove ashes, dry in the sun, and grind into flour, known as *kimela*. Place flour in the trough and mix with water; leave 3–4 weeks, turning with a wooden shovel every 2 or 3 days. Next shovel on to a corrugated iron sheet and heat over a fire, turning with a wooden shovel all the time until it is cooked into hard blackish lumps like small pieces of coke. Complete drying in the sun. This product is called *Kongo*, and will keep indefinitely.
>
> Repeat the recipe for making kimela, but using millet instead of sorghum. Measure out equal parts of kongo and millet kimela. Put a little of the millet kimela into the bottom of an earthenware pot, and add a 4-gallon tin of kongo mixed with water; leave for 36 hours. Mix the remaining millet kimela with water and add to pot containing kongo ferment. Leave for 4 hours, when beer will be ready to serve. It is pinkish, tasteless, and moderately heady.

The visitors, while waiting for refreshment, gather in groups and talk at the tops of their voices or draw up warm water from the sufurias through their reeds, to make sure that they are not blocked by the dregs of earlier carousals. As the scummy water comes to the boil they begin to collect round various hollows in the ground where the beer baskets are to be placed. One of the family comes along with a hoe and deepens the holes, which are about 2 ft. deep and a yard across. Now the seats are placed round the holes until there are about 50 people, in three or four rows, round each, still talking loudly, with their tall reeds, tipped with the perforated tin cones which act as filters, pointed like spears to the sky. These reeds may be as much as 6 ft. long, and are valued possessions; some are carried round, like trombones, in hollow containers, and extracted with pride and care. The longest reeds, as Dr. Trant points out, are specially adapted to back-benchers.

Now the woven beer baskets, each capable of holding 20–30 gallons, are brought along and patted into their places in the holes by willing helpers. The hosts reckon that 15 men need 4 gallons for a 12-hour drink. Out comes the beer in its 6-gallon earthenware pots, two staggering carriers to each, and someone thrusts his hand in to give the brew a good stir; his arm comes out coated to the shoulder with what looks like bran mash. The beer is poured sloppily, like thin gruel, into the baskets until they are half filled; and at this stage some rowdy spirits produce gourds and try to sneak a little; shouts and cries from the other guests deprecate this bad form. The water-boilers now arrive, carrying the hot sufurias with bunches of green leaves, and the baskets are filled to the brim: for in Ukara beer is drunk warm and diluted. If there is not enough water to fill the baskets more has to be fetched from the lake and boiled; so waiting for one's beer is a severe test of manners. Nevertheless no-one

1. Published by authority of the East Africa High Commission Kenya: The English Press. Pp. 74.

starts (except perhaps an elder, who may take a suck or two on pretence of testing the flavour) until the host gives the signal. It is a silent signal, hard to detect, but in a moment the reeds pierce the brown scum and the beer drink begins.

It usually lasts, Dr. Trant says, from 6 P.M. till 4 next morning; and, when the men have finished, fresh hot water is poured on the dregs and the women have a turn. If there is enough beer left over the same people come back next day and finish it. There is no drunkenness, however. Those who reach the swaying stage are discouraged from a further session, and those who become too uproarious are sent home. At the end of the party everyone is able to walk home to bed. Sobriety is also favoured by the fact that sucking up beer through a long reed is hard work.

Only the chief and one or two headmen drink beer every day; but even ordinary people manage to get to a beer drink about once a month. A stranger has to pay 5*s*. to the headman of his area when he arrives, so that he will be accepted as one of the family when he goes to a beer drink; but otherwise there is no charge. This single entrance fee makes him welcome at all drinking festivities on Ukara.

Beer-making certainly uses up grain which might be kept for food, but on the other hand, its yeast content is an important source of vitamin B. Moreover the inhabitants of Ukara are exporters of rice and cassava; they can afford to be a little extravagant in pursuit of their favourite recreation.

MORE FLOWERS, BY REQUEST

IN the long-ago days when boating was the thing, the Thames lock-keepers held an annual flower-growing competition. Perhaps they still do. At all events, those always sunny summers are marvellously coloured and scented, in memory, by their brilliant triumphs. Country stations, too, contend in this way, spilling lobelia and nasturtiums prodigally among the coal-stacks, and training ramblers along the palings, to the great refreshment of travellers. Now the Worshipful Company of Gardeners and the London Gardens Society (20, Buckingham Street, W.C.2) are striving to rouse the same horticultural spirit in the hospitals, beginning in a small way with the postgraduate and undergraduate teaching hospitals of the London area. This year sixteen hospitals competed, and there is every hope that next year more will join in. The perpetual silver cup, presented by the company, was won by the Middlesex Hospital, the silver and gilt medals, presented by the society, by St. Luke's Woodside Hospital and the Maudsley Hospital respectively, and certificates of merit by the London Hospital and Queen Charlotte's.

With this example before them other hospitals should pick up their spades. The object of the competition is "to encourage the use of flowers *supplementary* to those at present usually found in the wards," and the judges take into account not only the extent to which available open spaces are cultivated and embellished, and the decorative effect produced by flowers in window-boxes, waiting-rooms, and corridors, but also the skill of the gardeners in overcoming such drawbacks as poor sites and little sun, and the arrangement of plants, and provision for a succession of blooms. On two unspecified dates between April and October they call to see what is going on. Hospitals must thus keep on their mettle and not yield to the gardener's temptation to murmur with Ruth Draper: "You ought to have seen it last week."

University of London

On Sept. 30 the following degrees were conferred:

M.D.—Helen Ingleby.
M.S.—F. B. Cockett.

University of Aberdeen

On Oct. 28 the following degrees were conferred:

Ch.M.—G. E. Mavor.
M.B., Ch.B.—Frances Allan, J. G. Barnett, G. R. Buchan, Vera C. Coutts, B. B. Dale, N. L. Edmond, J. D. Garden, Walter Geddes, J. D. Johnston, Donald Macintosh, James McNab, C. O. Macrae, A. N. Milne, V. J. Murphy, G. G. Rennie, T. F. Rennie, N. F. Stewart, J. V. Watt, Isobel M. Wood.

University of St. Andrews

Dr. A. Greig Anderson is one of the five commissioners appointed, under the University of St. Andrews Act, 1953, to reorganise the university in accordance with the recommendations of the Royal Commission in University Education in Dundee.

University of Liverpool

Prof. Rudolph Nissen, of the department of surgery, University of Basle, will deliver the William Mitchell Banks lecture on Friday, Nov. 13, at 5.15 P.M., at the medical school. He is to speak on the Romance of Thoracic Surgery.

Royal College of Physicians of London

At a comitia of the college held on Oct. 29, with Sir Russell Brain, the president, in the chair, Dr. T. Jenner Hoskin, Dr. B. E. Schlesinger, Dr. A. M. Cooke, and Dr. J. C. Hoyle were elected councillors; Dr. J. Forest Smith was elected representative on the Committee of Management; and Sir Russell Brain, Sir Harold Boldero, Dr. W. G. Barnard, Sir Allen Daley, and Dr. A. M. Cooke were re-elected members of the Standing Joint Committee of the three Royal Colleges. Dr. J. A. Smiley was appointed Milroy lecturer for 1955.

The following candidates were elected to the membership:

Youssef Kamel Wasfi Aboul-Dahab, M.B. Cairo, Mary H. Aitken, M.B. Edin., Mary Bateman, M.D. Lond., D. B. Benazon, M.B. Lond., R. A. Bruce, B.M. Oxfd, William Brumfitt, M.B. Lond., J. P. Caley, M.B. Sheff., Rosemary A. Cooper, M.B. Camb., R. F. A. Dean, A. E. Dormer, M.B. Lond., C. P. V. Evans, M.B. Sydney, J. H. Evans, M.B. Lond., Henry Foster, M.B. Lond., major R.A.M.C., Louis Friedlander, M.B. Witwatersrand, J. F. Hale, B.M. Oxfd, D. R. Hay, M.B. N.Z., F. E. Higgins, M.B. Birm., A. W. Johnston, M.B. Camb., E. N. M. Johnston, M.B. Camb., Lilian F. Jones, M.B. Birm., H. P. Lambert, M.B. Camb., Graeme Larkins, M.B. Melb., J. C. Leonard, M.D. Lond., Adib Zaki Abd-El Massieh, M.B. Cairo, B. F. Robinson, M.B. Lond., Albert Sachs, C.B.E., M.D. Dubl., brigadier R.A.M.C., Q.H.P., A. W. Steinbeck, M.B. Sydney, L. V. Sthyr, M.D. Lond., J. D. Stride, surgeon lieutenant-commander R.N., J. H. Tyrer, M.D. Sydney, B. W. Webb, M.D. Lond.

Licences to practise were conferred on the following 106 candidates who have passed the final examination of the conjoint board:

John Anderson, M. E. Anfilogoff, Christine M. Armstrong, B. S. Beardsworth, P. J. Bell, J. A. Bevan, Cecil Bishop, R. J. Blow, C. W. W. Brown, L. F. Brunt, J. D. Campling, Patricia M. Carpenter, J. A. A. S. Chamberlain-Webber, H. J. Clarke, Alan Clark-Jones, W. E. Clifford-Jones, J. T. Coals, R. J. C. Cobbold, C. W. M. Cooper, Violet G. Cousins, Shirley A. Crockatt, John Crook, I. D. Davies, W. C. Davies, Jose A. Day, J. D. Devitt, Eva M. Dilling, M. S. G. Douglas, D. R. Elam, J. I. Evans, Paul Field, C. V. Foll, Gillian France, P. J. Frost, Thomas Gibson, Lawrence Goldie, Rosemary A. Grange, A. N. Green, J. M. Green, F. V. Griffiths, Sripal Tilak Gunewardene, Dorothy J. Harden, Margaret M. Heley, E. J. Hill, Harold Holden, W. J. Jackson, Elsie Jaques, I. R. Jenkins, J. J. Jones, Elizabeth M. H. Kennett, Paul Konfortion, G. E. T. Lawley, I. V. Lishman, David Longbourne, Kypros Loucas, T. M. McAneny, J. G. Macdonald, M. A. McDonald, G. F. Mackenzie, T. D. M. McNeill, Patricia S. Matthew, Bridgot d'E. Matthews, Clifford Mawdsley, Jean E. Moffat, Margaret L. M. Monro, R. J. Morgan, F. J. Morley, C. E. Nelson, M. R. Oates, R. C. Oliva, Patricia M. O'Sullivan, R. B. Pardoe, D. J. Parry, D. M. Paul, J. D. W. Peck, J. W. Prout, J. E. G. Rault, A. D. Richardson, J. A. V. Riley, A. A. Roe, W. A. St. John, S. C. C. Scott, D. E. Sharland, Jean M. Shields, A. J. Slim, Marguerite L. Sloper, P. C. Smart, C. J. Stephens, R. L. G. Sutcliffe, G. W. Sykes, Michael Tack, Andrew Talalla, R. W. H. Tavenner, E. M. Thomas, C. P. D. Tong, E. A. M. Tuck, H. M. Turner, J. C. S. Turner, F. B. Valentine-Hagart, H. W. C. Ward, Isabel M. P. Ward, W. H. Waters, J. H. H. Webster, P. H. Wiesendanger, Lee Yoke Htyan, G. W. G. Yule.

Diplomas were conferred on those named in the report of the meeting of the Royal College of Surgeons in our issue of Oct. 17 (p. 841). The following diplomas were also conferred:

D.M.R.-D.—Kirikankanange Mahendrapala Chandrasena de Silva, Habaraduwa Kudabokola Teslon Fernando, P. G. Keates, Leonard Langton, Kee Loo Lim, E. A. H. MacLaughlin, O. D. Macnamara, W. B. D. Maile, Ambika Charan Mitra, Bernard O'Hare, A. W. Robinson, Amalendu Roy, Hussain Tayebbhoy, J. A. Watson.
D.C.H.—Elizabeth A. Martin, K. R. Momberg.
D.M.R.-T.—D. M. T. Cones, G. McK. Crawford, D. A. L. Dick, Marjorie O. Dunster, G. B. Goodman, B. T. Hale, F. E. Neal, J. D. Reeves, Mohammed Samiullah, J. G. Stewart, Elsie N. K. Wallace.
D.O.—J. M. Ferries.

British Association of Physical Medicine

The annual meeting will be held at King's College Hospital, London, S.E.5, on Friday and Saturday, April 30 and May 1.

Germ-free Life

We published last week (p. 933) an account of the work of Prof. J. A. Reyniers on the rearing of germ-free animals. Professor Reyniers described his technique and results at a meeting in London on Oct. 15 arranged by Dr. W. P. Blount, poultry adviser to the British Oil & Cake Mills Ltd.

Myxomatosis

The Ministry of Agriculture and Fisheries report that myxomatosis has been found among wild rabbits near Robertsbridge in Sussex. The area involved covers woodland of about 100 acres. The disease was confirmed among rabbits near Edenbridge in Kent two weeks ago (see *Lancet*, Oct. 31, 1953, p. 935). The *Manchester Guardian* (Nov. 3) reports Prof. G. Ramon (Pasteur Institute) as saying that the disease has spread into Germany, Belgium, and Holland.

Royal Appointment

Captain J. B. Oldham, R.N.V.R., has been appointed an honorary surgeon to the Queen, in succession to Captain G. McCoull, R.N.V.R.

Charterhouse Rheumatism Clinic

Dr. J. F. Brailsford will deliver the Gilbert Scott lecture on Thursday, Nov. 19, at 5 P.M., at the clinic, 56, Weymouth Street, London, W.1. He will speak on the Prevention, Detection, and Treatment of Osteo-arthritis.

Nichols Fellowship

The council of the Royal Society of Medicine invites applications for this fellowship, which takes the form of a grant of £225 per annum in aid of research in obstetrics and gynæcology. Applications should be made before May 15 to the secretary of the society, 1, Wimpole Street, London, W.1, from whom further particulars may be had.

Shortage of Resident Staff

The latest annual report of the Mansfield Hospital Management Committee expresses concern at the difficulty in obtaining resident doctors, particularly for the casualty and anæsthetic services. The salaries paid to such doctors are "certainly no inducement to remain in the service longer than the 12 months' statutory period after qualifying." For many years, the report adds, the almost traditionally low salaries have been accepted; but now a new approach should be made to the question of the remuneration of young resident doctors.

Dr. Willi Hoffer has been appointed to the Abraham Flexner visiting lectureship at Vanderbilt University, Nashville, Tennessee.

Diary of the Week

NOV. 8 TO 14

Monday, 9th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Prof. G. W. Pickering: Concept of Essential Hypertension.

ROYAL EYE HOSPITAL, St. George's Circus, S.E.1
5.30 P.M. Prof. Thomas Nicol: Surgical Anatomy of Orbit and Ocular Adnexa.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1
8.30 P.M. Mr. E. S. Horning, B.SC., Sir Stanford Cade: Hormones in Relation to Cancer.

Tuesday, 10th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
3.45 P.M. Mr. W. H. Jayne: Slide Culture of Malignant Cells. (Erasmus Wilson demonstration.)

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Prof. E. J. King, PH.D.: Alkaline and Acid Phosphatases.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Section of Psychiatry.* Dr. J. H. Gould: Use of Vitamins in Psychiatric Practice.

ROYAL EYE HOSPITAL
5 P.M. Mr. T. M. Tyrrell: Pitfalls in Refraction.

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. D. O'Neill: Stress in Relation to Diseases of the Skin.

WEST END HOSPITAL FOR NERVOUS DISEASES, 40, Marylebone Lane, W.1
5.30 P.M. Mr. G. C. Knight: Spinal Compression.

CHELSEA CLINICAL SOCIETY
8.30 P.M. (South Kensington Hotel, 41, Queen's Gate Terrace, S.W.7.) Mr. F. E. Henderson, A.M.I.E.E., Dr. Phillippe Bauwens: Electronics in Industry and Medicine.

MANCHESTER MEDICAL SOCIETY
8 P.M. (Medical School, University of Manchester.) *Section of Surgery.* Mr. W. F. Nicholson: Surgery of Pulmonary Tuberculosis.

Wednesday, 11th

SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane, E.C.4
4 P.M. Prof. C. H. Gray: Fluid and Electrolyte Balance.
5.15 P.M. Mr. F. A. Williamson-Noble: Early Treatment of Eye Diseases.

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Dr. H. Bickel: Observations on Lignac-Fanconi Disease, Wilson's Disease, and Phenylketonuria.

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Section of Physical Medicine.* Dr. Michael Kremer: Acroparæsthesia and Costo-clavicular Compression.
8 P.M. *Section of Proctology.* Mr. T. McW. Millar: John of Arderne, the Father of British Proctology. (Presidential address.)

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.1
3.30 P.M. Dr. J. Greenwood Wilson: Care and Aftercare—the Cardiff Interpretation.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. H. Haber: Benign Epithelial Tumours of Skin.

BRITISH ASSOCIATION OF SPORT AND MEDICINE
5 P.M. (Westminster Medical School, Horseferry Road, S.W.1.) Dr. H. Noel Bleasdale: Health and Minor Maladies of Swimmers and Divers. Dr. Michael Ward: Medical Aspects of the Everest Expedition, 1953.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. *Section of Pathology.* Dr. F. A. Langley: Ovarian Tumours—Human and Experimental.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH
8.30 P.M. (Royal College of Surgeons, 18, Nicolson Street, Edinburgh.) Dr. A. S. Henderson, Dr. R. E. Verney: Problems of Student Health. (Joint meeting with Royal Medico-Chirurgical Society of Glasgow.)

Thursday, 12th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Prof. E. J. Wayne: Diagnosis of Thyrotoxicosis. (Bradshaw lecture.)

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. Geoffrey Keynes: Investigations into Thymic Disease and Tumour Formation. (Cecil Joll lecture.)

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Mr. R. L. M. Synge, F.R.S.: Principles of Chromatography.

ROYAL SOCIETY OF MEDICINE
5 P.M. *Section of Ophthalmology.* Dr. Karl Hruby (Vienna): Clinical Investigation of the Vitreous Body.

ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Dr. M. T. Morgan: Modern Developments in Rodenticides and Insecticides in Port Health and Quarantine Administration.

INSTITUTE OF CHILD HEALTH AND INSTITUTE OF NEUROLOGY
5.30 P.M. (National Hospital, Queen Square, W.C.1.) Dr. Helen Dimsdale: Syndromes Involving the Basal Ganglia—Clinical Types, Diagnosis, and Treatment.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Pathogenesis of Tinea Capitis.

HONYMAN GILLESPIE LECTURE
5 P.M. (University New Buildings, Teviot Place, Edinburgh.) Prof. John Crofton: Chemotherapy of Pulmonary Tuberculosis.

Friday, 13th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
4 P.M. Dr. L. G. Pugh: 1953 Everest Expedition.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. O'Neill, Dr. G. B. Mitchell-Heggs: Neurodermatoses.

OSLER CLUB OF LONDON
7.45 P.M. (11, Chandos Street, W.1.) Prof. Ludwig Edelstein, PH.D.: Karl Sudhoff (born Nov. 26, 1853). Prof. J. Trueta: Michael Servetus (died Oct. 27, 1553).

UNIVERSITY OF LIVERPOOL
5.15 P.M. (Medical School.) Prof. Rudolf Nissen (Basle): Romance of Thoracic Surgery. (William Mitchell Banks lecture.)

Saturday, 14th

BIOCHEMICAL SOCIETY
11.30 A.M. (St. Mary's Hospital Medical School, Paddington, W.2.) Scientific Papers.

Appointments

HIRD, GORDON, M.B. Aberd., D.P.H.: asst. M.O.H., Warwickshire County Council.

JONES, CRICHTON, M.R.C.S., D.P.H.: asst. M.O.H., Warwickshire County Council.

MCGOVERN, JAMES, M.B. Glasg., D.P.H.: asst. M.O. for Salop County Council, and M.O.H. for Ellesmere urban and rural, Wem urban and rural, and Whitchurch urban districts.

Colonial Service:

ASHMORE, J. H., M.B. Dubl.: M.O., Falkland Islands.
BOWMAN, R. K., M.R.C.S.: M.O., Fiji.
CUNNINGHAM, A. J., M.B. Lpool: M.O., Zanzibar.
HARDING, H. A., M.D. Malta, PH.C.: M.O., Federation of Malaya.
HORN, D. W., M.B. Edin., D.T.M.&H., D.P.H.: medical statistician, Nigeria.
JEFFREYS, T. E., M.R.C.S.: M.O., Federation of Malaya.
MURRAY, R. J., M.R.C.S.: resident M.O., Kenya.
PHILLIPS, G. A., M.R.C.S.: M.O., Federation of Malaya.
YAP POW MENG, M.R.C.S., D.P.M.: specialist (psychiatric), Hong-Kong.

Appointed Factory Doctors:

DAVIDSON, A. D., O.B.E., M.B. Aberd.: for Steyning, Sussex.
PARKES, G. S., M.B. Belf.: for Berkeley, Gloucestershire.
WARD, C. W., M.B. Leeds: for Pateley Bridge, Yorkshire.

London Transport:

EVANS, D. M., M.B. Camb.: officer in charge of the north east division medical centre, Manor House.
FYFE, J. L., M.B. St. And., D.P.H., D.I.H.: senior M.O. with charge of the medical examinations branch, Griffith House.
SEFTON MYERS, C. E., M.B.E., M.R.C.S.: officer at the north east division medical centre, Manor House.

South-Western Regional Hospital Board:

ARTHURS, G. N., M.B. Lond., F.R.C.S.: senior registrar in neurosurgery, Frenchay Hospital, Bristol.
CUTHILL, J. M., M.B. Glasg., D.P.M.: senior registrar in psychiatry, Tone Vale Hospital, near Taunton, Somerset.
DUTTON, J. E. M., M.B. Durh., F.R.C.S.: registrar in neurosurgery, Frenchay Hospital, Bristol.
FOREMAN, J. M., M.B. N.Z., F.R.C.S.E.: surgical registrar, Gloucestershire Royal Hospital.
JOYCE, M. H. B., M.B. Brist.: registrar in psychiatry, Bristol mental hospitals.
MORGAN, JEAN, M.B. Brist.: registrar in pathology, Bath group of hospitals.
SEAGER, C. P., M.B., B.SC. Wales: registrar in psychiatry, Bristol mental hospitals.

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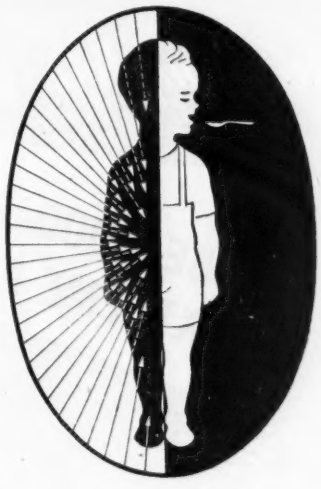

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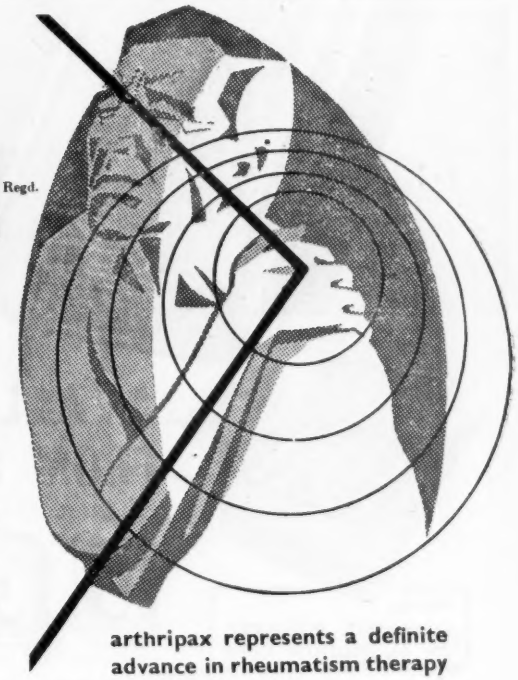

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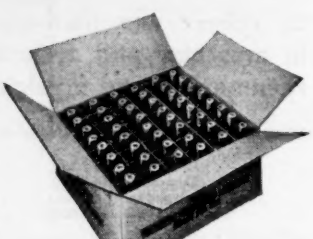

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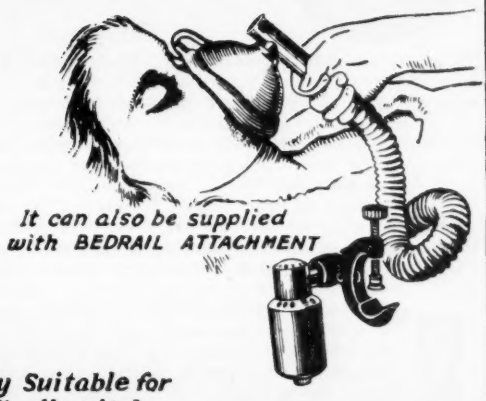

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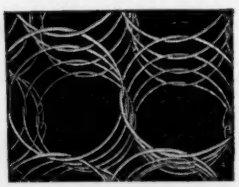

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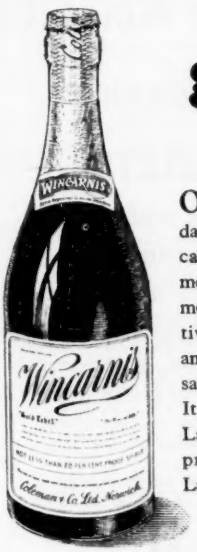

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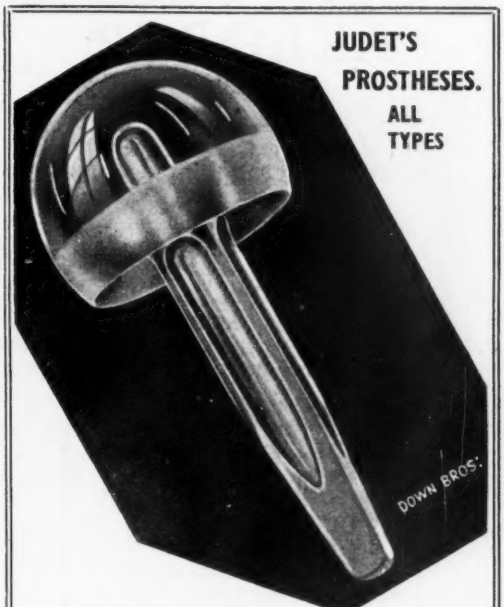

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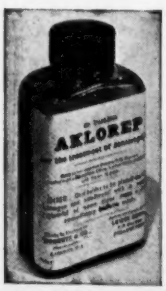

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Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

The next EXAMINATION for the MEMBERSHIP will commence on MONDAY, 28TH DECEMBER, 1953.

Prospective candidates are asked to note that entries accompanied by the certificates, testimonials and the Examination fee of 15 guineas as required by the by-laws, must reach the College not later than first post on Monday, 30th November. Candidates must have been qualified for 18 months.

Candidates who propose to submit published work under the regulations are required to give 28 days notice, and should apply in writing to the Registrar, without delay, for detailed instructions as to the procedure they should follow. Completed entries for published work must also reach the College not later than first post on Monday, 30th November, 1953.

HAROLD BOLDERO, D.M., Registrar.

12, Pall Mall East, London, S.W.1.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

B. IFOR EVANS, M.A., D.LIT., will deliver the LLOYD-ROBERTS LECTURE on THURSDAY, 19TH NOVEMBER, 1953, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject: "Science and Literature."

Any member of the medical profession admitted on presentation of card.

By order of the President,
HAROLD BOLDERO, Registrar.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Dr. EDWARD JOHNSON WAYNE, F.R.C.P., will deliver the BRADSHAW LECTURE on THURSDAY, 12TH NOVEMBER, 1953, at 5 P.M., at the College, Pall Mall East.

Subject: "The diagnosis of thyrotoxicosis."

Any member of the Medical Profession admitted on presentation of card.

By order of the President,
HAROLD BOLDERO, Registrar.

UNIVERSITY OF LONDON

GRANTS FOR RESEARCH

Applications are invited from members* of the University for grants from the Central Research Fund to assist specific projects of research and for the provision of special materials and apparatus. Grants are not made for normal maintenance.

Applications must next be received not later than 30th November, 1953. Forms of application and further particulars may be obtained from the Secretary to the Central Research Funds Committee, University of London, Senate House, London, W.C.1.

*Members of the University are defined by Statute as the Chancellor, the members for the time being of the Court and of the Senate respectively, the Professors and Readers and other Teachers of the University during their tenure of office, the graduates and the students.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

RICKMAN GODLEE TRAVELLING SCHOLARSHIP

Applications are invited for the Rickman Godlee Travelling Scholarship which is of the value of £1000 p.a. The Scholarship can be held in any branch of medicine, including obstetrics and gynæcology, surgery or pathology. Applicants for the Scholarship must have been full students of University College Hospital Medical School, have held a House Surgeoncy and 1 other resident appointment in University College Hospital. The Scholarship is tenable for 1 year, during which period the Scholar must carry out a course of study or scientific research approved by the School Council, on the recommendation of the Academic Board, in recognised Medical or Scientific Institutions either in or outside the United Kingdom.

Applications should be forwarded to the Secretary, University College Hospital Medical School, University-street, London, W.C.1. on or before Saturday, 28th November, 1953.

THE EMPIRE RHEUMATISM COUNCIL is holding a SYMPOSIUM on 'BUTAZOLIDIN' (Phenylbutazone) at The Royal Society of Medicine (Barnes Hall), 1, Wimpole-street, London, W.1, on FRIDAY, 13TH NOVEMBER, 1953, at 2 P.M.

Tea will be served in the West Hall at 4.15 P.M.

Admission tickets (free) obtainable from the General Secretary, Empire Rheumatism Council, Tavistock House (N), Tavistock-square, W.C.1.

PROGRAMME

Clinical Section

Chairman: Dr. W. S. C. COPEMAN, O.B.E., M.D., F.R.C.P.

"The place of Butazolidin in the treatment of arthritis."

2.0 P.M. ... Dr. O. STEINBROCKER (New York).
2.20 P.M. ... Dr. J. P. CURRIE (Glasgow).
2.40 P.M. ... Dr. G. R. NEWNS (Sheffield).
3.0 P.M. ... Dr. I. MEANOCK, Dr. M. E. FEARNLEY and Dr. ENA BRUCK (London).
3.20 P.M. ... Discussion: Opened by Dr. F. DUDLEY HART (London).
4.15 P.M. ... Tea.

Experimental Section

Chairman: Prof. E. C. DODDS, M.V.O., M.D., F.R.C.P., F.R.S.

4.45 P.M. ... Prof. R. DOMENJOZ (Saarbrucken). "The Pharmacological Aspects of Butazolidin."
5.20 P.M. ... Dr. R. M. MASON (London). "Observations on Butazolidin and Uric Acid Metabolism."
5.40 P.M. ... Dr. I. G. HUMBLE (London). "Anomalies of Blood Clotting in Patients on Butazolidin."
5.50 P.M. ... Dr. A. HILL and Dr. S. GOOD (Aylesbury). "C-Reactive Protein and Butazolidin."
6.0 P.M. ... Dr. P. O. WILLIAMS (London). "Sodium and Chloride Metabolism with Butazolidin."
6.10 P.M. ... Discussion: Opened by Prof. G. A. H. BUTTLE (London).

EMPIRE RHEUMATISM COUNCIL

The AUTUMN WEEK-END COURSE will be held at The Arthur Stanley Institute, Middlesex Hospital, Peto-place, Marylebone-road, N.W.1 (Great Portland-street and Regent's Park Underground Stations), on FRIDAY and SATURDAY, 13TH and 14TH NOVEMBER, 1953.

LECTURE-DEMONSTRATIONS

Friday, 13th November

4.15 P.M. ... Introduction .. .. .. W. S. C. COPEMAN, O.B.E., F.R.C.P. (Chairman)
4.30 P.M. ... Rheumatism in the Population .. J. H. KELLGREN, F.R.C.P., F.R.C.S.
5.30 P.M. ... Rheumatoid Arthritis .. .. E. G. L. BYWATERS, F.R.C.P.

Saturday, 14th November

10.15 A.M. ... Physical Methods in the Treatment of Rheumatic Diseases .. H. A. BURT, F.R.C.P.
11.30 A.M. ... Gout .. .. G. R. FEARNLEY, M.R.C.P.
2 P.M. ... Recent American Work on Rheumatism .. Dr. OTTO STEINBROCKER (New York)
3 P.M. ... Orthopædic Aspects of the Rheumatic Diseases .. J. C. R. HINDENACH, F.R.C.S.
4.15 P.M. ... Osteo-arthritis .. .. .. F. DUDLEY HART, F.R.C.P.

The fee for the course will be 2 guineas, limited to 60 entries, to be received with remittance, at least 1 week before by the General Secretary, Empire Rheumatism Council, Tavistock House (N), Tavistock-square, W.C.1.

COURSE IN BONE IN HEALTH AND DISEASE

at the
INSTITUTE OF ORTHOPÆDICS
16TH–21ST NOVEMBER, 1953

16th November Town Section	General affections of the adult skeleton	Mr. H. J. BURROWS
	The kidney and bone diseases	Dr. R. NASSIM
	General properties of bone	Dr. H. A. SISSONS
	General clinical demonstration	Mr. D. TREVOR
17th November Country Section	Chemistry of bone and biochemical diagnosis of general bone diseases	Dr. T. F. DIXON
	Response of bone and cartilage to infection	Dr. C. H. LACK
	Metabolic cases	Dr. R. NASSIM
	General clinical demonstration	Mr. J. I. P. JAMES
18th November Town Section	Osteomyelitis	Mr. H. J. SEDDON
	Rare bone infections	Mr. H. J. SEDDON
	Radiology of secondary deposits in bone	Dr. F. C. GOLDING
19th November Country Section	Osteoporosis	Dr. F. H. STEVENSON
	Congenital disorders of the skeleton	Mr. A. T. FRIPP
	General clinical demonstration	Mr. P. H. NEWMAN
20th November Town Section	Recent advance in the pathology of tumours of bone	Dr. H. A. SISSONS
	Bone tumours (clinical)	Mr. K. I. NISSEN
	Bone repair	Dr. H. A. SISSONS
	Bone grafting and internal prostheses	Mr. H. J. BURROWS
21st November Town Section	Rheumatoid arthritis	Dr. H. A. SISSONS
	Reticuloses affecting bone	Dr. R. O. MURRAY

The fee for this course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean, at 234, Great Portland-street, W.1.

THE ROYAL CANCER HOSPITAL
Fulham-road, London, S.W.3.

GORDON JACOBS RESEARCH FELLOWSHIPS

Applications are invited from medically qualified persons for a full-time Clinical Research Fellowship. Special consideration will be given to applicants wishing to carry out research in the medical aspects of protection against ionising radiation. The Grant will be £650–£750 according to age and experience, and the appointment will be for 1 year in the first instance, and may be renewable annually to a tenure of 3 years.

Applications should include: (*a*) an outline of the research proposed; (*b*) details of previous training and experience, academic qualifications and published papers; and (*c*) the names of 2 referees, and addressed to reach the House Governor not later than 16th November.

GLASGOW ROYAL INFIRMARY

MCGHIE CANCER RESEARCH SCHOLARSHIP

Applications are invited from suitably qualified persons (not necessarily medical graduates) for the above Scholarship, which is now vacant. This appointment is a whole-time research appointment, and remuneration is at the rate of £800–£1000 p.a. according to age and experience.

Applications, with names of not more than 3 referees, should be forwarded to the undersigned from whom further particulars may be obtained. In their applications, candidates should indicate the nature and scope of their proposed research.

THOMAS BRYSON, M.B., CH.B.,
Medical Superintendent, Royal Infirmary.

84, Castle-street, Glasgow, C.4.

GLASGOW ROYAL INFIRMARY

MCINTYRE CLINICAL RESEARCH SCHOLARSHIP

Applications are invited from young medical men for the above Scholarship. The work of this Scholarship may be devoted to any branch of clinical investigation. The appointment is whole-time, and remuneration is at the rate of £500 p.a. for 2 years.

Applications, with names of not more than 3 referees, should be forwarded to the undersigned from whom further particulars may be obtained. THOMAS BRYSON, M.B., CH.B.,
Medical Superintendent, Royal Infirmary.

84, Castle-street, Glasgow, C.4.

BRITISH PSYCHO-ANALYTICAL SOCIETY

The Members of the above Society invite all members of the Medical Profession to attend the annual "ERNEST JONES" LECTURE, entitled "Psycho-Analysis and the History of Art"—which will be given by kind permission of the Royal Society of Medicine in the Barnes Hall of that Society on MONDAY, 23RD NOVEMBER, at 8.15 P.M., by E. H. GOMBRICH, PH.D., M.A. (The Warburg Institute, University of London).

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. A vacancy exists for a RESEARCH FELLOW IN HISTOCHEMISTRY in the Department of Morbid Anatomy. The post will in the first instance be tenable for 1 year. Salary £750–£1000 p.a. (plus superannuation) according to age, qualifications, and experience.

Forms of application and further particulars are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

ROYAL FREE HOSPITAL SCHOOL OF MEDICINE, Hunter-street, London, W.C.1. Applications are invited from registered medical practitioners (Men or Women) for the appointment from 1st January, 1954, of LECTURER IN PATHOLOGY AND HONORARY ASSISTANT BACTERIOLOGIST to the Royal Free Hospital. Duties include both teaching and hospital diagnostic routine. 2 or 3 years experience in pathology essential, including general training in bacteriology. Salary £900–£100–£1100 p.a., with superannuation benefits and family allowances.

Applications (9 copies), stating age, qualifications and experience, with 9 copies of 3 testimonials, to be sent to the Secretary at the above address not later than 21st November, 1953.

UNIVERSITY OF GLASGOW. Assistantship in Experimental Pharmacology. Applications are invited for the whole-time academic post of ASSISTANT IN EXPERIMENTAL PHARMACOLOGY. The salary scale for Assistants with a medical qualification is £600–£50–£800, and for Assistants without a medical qualification £400–£50–£550. The initial salary will be fixed according to qualifications and experience. F.S.S.U. and family allowance benefits.

Applications (6 copies), should be lodged, not later than 30th November, 1953, with the undersigned, from whom further particulars may be obtained.

ROBT. T. HUTCHESON, Secretary of University Court.

UNIVERSITY OF ADELAIDE, Australia. Applications are invited for appointment as READER IN PATHOLOGY. Salary range £A1250–£A40–£A1450 plus cost-of-living. The cost-of-living adjustment is at present £A244 8s., and it is not thought that there will be any change in that figure in the foreseeable and near future. The Reader will be required to undertake teaching and research in the Department of Pathology, and to assist in the autopsy work which the department conducts for the Royal Adelaide Hospital, the main Teaching Hospital.

The original application and original supporting documents should be sent to the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1 (from whom conditions of appointment are obtainable), and 2 copies forwarded by air to the undersigned, to reach him not later than 31st January, 1954.

A. W. BAMPTON, Registrar.

Hospital Services : Senior Appointments

GUY'S HOSPITAL AND SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of ASSISTANT SURGEON (part-time), in Radiotherapy. The appointment which is of Consultant status will be made jointly by the Board of Governors of Guy's Hospital and the South East Metropolitan Regional Hospital Board. Applicants are required to hold a Diploma in Radiotherapy as well as higher medical or surgical qualifications. The post will involve maximum part-time service and the successful applicant will be required to carry out weekly sessions at Guy's Hospital, London, S.E.1, and at Pembury Hospital, in the Tunbridge Wells Group of hospitals.

Applications (1 copy), together with the names of 3 referees, should be submitted to reach the Superintendent, Guy's Hospital, S.E.1, not later than 30th November, 1953. In accordance with Statutory Instrument No. 1259 of the National Health Service Regulations, canvassing members of the Board or Advisory Appointments Committee will lead to disqualification.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT PHYSICIAN in Physical Medicine required at Central Middlesex Hospital, Park Royal, N.W.10 (756 Beds), and King Edward Memorial Hospital, Ealing, W.13 (165 Beds). Salary scale £1300 (at age 32)–£1750. Hospitals may be visited by direct appointment.

Detailed applications, including date of birth, and names of 3 referees, to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 4th December, 1953.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. PÆDIATRICIAN (Consultant) required at King Edward Memorial Hospital, Ealing, W.13 (165 Beds), for 2 half-days a week. Hospital may be visited by direct appointment.

Detailed applications, including date of birth, and names of 3 referees, to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland-place, W.1, by 4th December, 1953.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. The Board of Governors invites applications for the appointment of RADIOLOGIST (Consultant status) at The Maida Vale Hospital for Nervous Diseases, Maida Vale, W.9. Applicants must hold a Diploma in Diagnostic Radiology and should preferably have a higher medical or surgical qualification. Special experience in neuroradiology is essential. The appointment will be part-time (3 sessions).

Applications (35 copies), giving the names of 3 referees, must be sent to the undersigned not later than 19th December, 1953.

H. EWART MITCHELL, Secretary.

The National Hospitals for Nervous Diseases,
Queen-square, W.C.1.

ST. THOMAS'S HOSPITAL, S.E.1. Surgeon (part-time), Consultant status.

Applications (12 copies), including names and addresses of 3 referees, to the Clerk of the Governors by 14th November, 1953, for appointment commencing in November, 1954.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS AND BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications are invited for the joint appointment of a CONSULTANT ANÆSTHETIST on the basis of maximum part-time service. Duties will be allocated as follows :—

United Birmingham Hospitals

3 sessions (not in thoracic surgery).

Birmingham Regional Hospital Board

6 sessions in the Regional Thoracic Service, 4 of which will be at the Yardley Green Hospital (for tuberculosis and diseases of the chest), and 2 at the Hill Top Hospital, Bromsgrove (for pulmonary and cardiac surgery).

The appointment will be made under S.I.(1950)1259, and will be held on the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, giving the names of 3 referees, must be submitted on a special form to be obtained from the undersigned. Canvassing of members of the Board of Governors or of the Advisory Appointments Committee, will lead to disqualification. Closing date 21st November, 1953.

G. A. PHALP,
Secretary and Principal Administrative Officer,
United Birmingham Hospitals.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(*a*) **Herefordshire Group of hospitals**

Part-time CONSULTANT in General Medicine (9 notional half-days weekly). Duties at General Hospital (154 Beds) and County Hospital (279 Beds), Hereford, and other group hospitals. Wide experience specialty and higher qualification required.

(*b*) **Birmingham (Dudley Road) Group of hospitals**

Whole-time CONSULTANT in Pathology. Appointment to Group Pathological Department. Duties at Dudley Road and other associated hospitals, and Yardley Green Hospital for tuberculosis and diseases of the chest.

(*c*) **Burton-on-Trent Group of hospitals**

Part-time CONSULTANT in Ophthalmology (6 notional half-days weekly). Duties mainly in Ophthalmic Department of General Infirmary (240 Beds—20 ophthalmic beds).

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 23rd November, 1953.

BIRMINGHAM. WINSON GREEN HOSPITAL. (1360 Beds.) Whole-time ASSISTANT PSYCHIATRIST (£1300–£1750 p.a.). Duties also at ancillary premises. Experience specialty and possession of D.P.M. required.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 23rd November, 1953.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ASSISTANT PSYCHIATRIST at Ipswich Child Psychiatry Clinic. This is a modern well equipped and very active clinic run as part of the Regional Hospital Service under the direction of a full-time Consultant Child Psychiatrist. There are branch clinics in Lowestoft, Saxmundham, Bury St. Edmunds, and Sudbury. Applicants must have a sound knowledge of child psychiatry and possess the D.P.M. Salary will be on the rate £1300–£1750.

Applications (8 copies), stating age, qualifications, and details of present and previous appointments, with names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 16th November, 1953. Applicants invited to visit Clinic by direct arrangement with Hospital Management Committee Secretary at East Suffolk and Ipswich Hospital.

LIVERPOOL REGIONAL HOSPITAL BOARD. Regional NEUROSURGICAL SERVICE. Applications are invited for the post of Whole-time CONSULTANT NEUROSURGEON at the Neurosurgical Centre, Walton Hospital, which also provides a Consultant service for other hospitals in the Liverpool Region and North Wales. Applicants must possess a higher surgical qualification and should have had wide experience in the field of neurological surgery.

Application forms from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 28th November, 1953.

VINCENT COLLINGE, Secretary to the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for 2 Whole-time NON-RESIDENT ASSISTANT RADIOTHERAPISTS at Christie Hospital and Holt Radium Institute, Manchester. Candidates must possess the D.M.R.(T.). Successful candidates will be required to live in or near Manchester. Salary £1300–£50–£1750 p.a.

Application forms from the Senior Administrative Medical Officer, Cheetwood-road, Manchester, 8, to be returned by 16th November, 1953.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. PÆDIATRICIAN (Consultant) required at King Edward VII Hospital, Windsor (540 Beds), Maidenhead Hospital, Maidenhead (100 Beds), and Upton Hospital, Slough (213 Beds, including Iver, Denham and Langley Cottage Hospital), for 6 half-days a week. Successful candidate would be required to reside locally. Hospitals may be visited by direct appointment.

Detailed applications, including date of birth, and names of 3 referees, to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 4th December, 1953.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointments as :—

(1) Part-time CONSULTANT ANÆSTHETIST, Hertford Group of hospitals (8 sessions a week). Residence in the Group area is a requirement of the appointment. Further details on application.

(2) Part-time CONSULTANT ANÆSTHETIST, Rush Green Hospital, Romford, Essex (2 sessions a week).

(3) Part-time CONSULTANT PHYSICIAN, Rush Green Hospital, Romford, Essex (2 sessions a week).

(4) Part-time CONSULTANT SURGEON, Rush Green Hospital, Romford, Essex (6 sessions a week).

Separate applications (6 copies), indicating post concerned and detailing private address, date of birth, qualifications and experience, present appointment(s) (including number of sessions) and grade, and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 21st November, 1953.

NEWCASTLE REGIONAL HOSPITAL BOARD. Sunderland Area Hospital Management Committee Group (Population 350,000). MONKWEARMOUTH AND SOUTHWICK ACCIDENT AND ORTHOPÆDIC HOSPITAL. (120 Beds.) SENIOR CASUALTY OFFICER (whole-time), within the range of £1300–£50–£1750. Duration of tenure of post not exceeding 4 years. The Hospital is a main accident and orthopædic hospital for the Sunderland area and gives excellent experience in major and minor casualty work. The appointment is, preferably, for a resident Casualty Officer, and if held by a non-resident doctor would involve living in the Hospital on 2 or 3 nights per week. Further particulars may be obtained from the Senior Orthopædic Surgeon, Monkwearmouth and Southwick Hospital, Sunderland.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time CONSULTANT CHILD PSYCHIATRIST, Crichton Royal, Dumfries, and with duties elsewhere in the Region as may be arranged. A house is available. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments :—

Part-time CONSULTANT SURGEON at the Western Infirmary, Glasgow, on the basis of 7 sessions weekly.

Whole-time CONSULTANT CHILD PSYCHIATRIST, Crichton Royal, Dumfries, and with duties elsewhere in the Region as may be arranged.

Whole-time ASSISTANT PHYSICIAN with duties primarily in the Geriatric Units at Foresthall Hospital and elsewhere in the Region as may be arranged. Salary on the scale £1300–£50–£1750.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies) stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for a whole-time post of TUBERCULOSIS PHYSICIAN, in the grade of Senior Hospital Medical Officer, in the Royal Victoria Group of hospitals, Edinburgh. In the first instance the duties will be in Southfield Hospital in respect of inpatient duties, but outpatient work will also be undertaken. The post will be associated with the Professorial Unit of the Department of Tuberculosis and Diseases of the Respiratory System of the University of Edinburgh. In the light of developments of the tuberculosis service the person appointed may be required to undertake further duties in other hospitals or clinics in Edinburgh. The post is superannuable and the conditions of service are in accordance with the regulations.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3 (from whom further particulars can be obtained), within 30 days.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for a post of CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST at the Western General Hospital, Edinburgh. The person appointed will be Consultant in charge of the Obstetric Unit (42 Beds) and the Gynæcological Unit (25 Beds). The Hospital is a teaching unit of the University of Edinburgh and the person appointed will be required to take charge of the teaching of an undergraduate group. The appointment will be on a basis of 7 sessions per week. The post is superannuable and the conditions of service are in accordance with the regulations.

Applications, giving particulars of age, qualifications and experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, within 30 days.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time appointment of ASSISTANT TUBERCULOSIS PHYSICIAN (Senior Hospital Medical Officer scale). The person appointed will be based on East Fortune Hospital, North Berwick, where it is expected that a house will be available in the Spring of 1954. The duties will include day-to-day charge of approximately 120 Beds in East Fortune under the supervision of a visiting Consultant, clinic sessions in Edinburgh, and some general duties in coöperation with the existing medical staff of East Fortune Hospital. Although the duties in the Hospital will be primarily among patients with pulmonary disease, the Hospital admits cases of genito-urinary, and bone and joint tuberculosis and tuberculosis in children. Regular thoracic surgery is carried out in the Hospital, and the person to be appointed will be expected to take part in the selection and aftercare of such cases. The post is superannuable and the conditions of service are in accordance with the regulations.

Applications, giving particulars of age, previous experience and qualifications, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, within 30 days.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. MARYFIELD HOSPITAL, DUNDEE. Applications are invited for the post of ASSISTANT PHYSICIAN (Consultant) in the Unit of the Professor of Medicine in the University of St. Andrews at Maryfield (General) Hospital, Dundee (a Teaching Hospital of 400 Beds). There is associated with the appointment that of a Lecturer in Clinical Medicine. The duties will also include that of Visiting Physician to Stracathro Hospital, Brechin, and the Royal Mental Hospital, Montrose, and Consultation Clinics at other Centres. The post will be part-time with remuneration on the basis of 8 notional half-days per week. Salary and other conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, "Braeknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 14th December, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR ASSISTANT PSYCHIATRIST required for the Lawn Hospital, Lincoln. A flatlet is available. Salary £1300–£50–£1750.

Application forms obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 28th November, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR ASSISTANT PSYCHIATRIST required for Bracebridge Heath Hospital, near Lincoln. Salary £1300–£50–£1750. A modern self-contained flat is available.

Application forms obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 28th November, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT CHILDREN'S PSYCHIATRIST required for South Lincolnshire.

Application forms and further details obtainable from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 5th December, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. 2 Locum ANÆSTHETISTS required immediately for 2 months in the first instance in the following areas : (*a*) Sheffield and Barnsley, (*b*) Rotherham and Mexborough. Remuneration at the rate of 31½ guineas or 45 guineas per week, according to status.

Apply to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, giving age nationality, qualifications, present and previous appointments with dates, naming 2 referees.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time ASSISTANT ORTHOPÆDIC SURGEON (Senior Hospital Medical Officer grade) (9 half-days per week) for the Isle of Wight Group. Successful candidate to work in association with visiting Consultant Orthopædic Surgeon as a member of the Area Orthopædic Team covering the Southampton, Winchester, Salisbury, and Isle of Wight Groups.

Applications (5 copies), giving date of birth, qualifications, experience, names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 5th December, 1953. Applicants may visit Group by local arrangement.

WELSH REGIONAL HOSPITAL BOARD. A Whole-time Locum Tenens CONSULTANT RADIOLOGIST is required immediately to serve the Merthyr and Aberdare Hospital Management Committee area for a period of approximately 4 months. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, together with the names of 2 referees, to be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Temple of Peace and Health, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD. A Whole-time Locum Tenens ORTHOPÆDIC SURGEON is required as holiday relief in the Rhymney and Sirhowy Valleys Hospital Management Committee area for the period 10th December–23rd December, 1953, inclusive. Salary will be in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, together with the names of 2 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a CONSULTANT ANÆSTHETIST to serve the Rhymney and Sirhowy Valleys Hospital Management Committee. The successful candidate, who will work mainly at the Caerphilly District Miners' Hospital, will be required to reside within the Area, and will also be expected to serve other hospitals in this and neighbouring groups. Candidates must be in possession of the D.A. and have had wide experience in the specialty. The successful candidate will be asked to state whether he wishes to hold a whole-time or maximum part-time appointment.

Applications (12 copies), stating date of birth, giving details of qualifications, experience, previous appointments with dates, and publications, together with the names of 3 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 21 days of appearance of this advertisement.

NEW ZEALAND. AUCKLAND HOSPITAL BOARD. Applications are invited from qualified medical practitioners of the British Commonwealth who are eligible to qualify under the Hospital Employment (Medical Officers) Regulations, 1952, as "Junior Specialist" for the position of JUNIOR NEUROSURGICAL SPECIALIST, Auckland Hospital. The appointment is a full-time one for a period of 1 year from date of taking up duties and successful applicant will be required to take up appointment on 1st January, 1954, or as soon after that date as is practicable. An extension of the term for a limited period would be considered by the Board. The position is non-residential. Salary scale: £NZ1290 p.a. rising to £NZ1590 p.a. by annual increments of £NZ50. Commencing salary within this scale according to qualifications and experience in the specialty. Conditions of appointment and form of application may be obtained from the Office of the High Commissioner for New Zealand, 415, Strand, London, W.C.2.

Applications close with the undersigned at the Office of the Board, Kitchener-street, Auckland, New Zealand, at NOON on Monday, 30th November, 1953.

R. F. GALBRAITH, Secretary.

Hospital Services : Junior Appointments

BROMPTON HOSPITAL, S.W.3. Applications are invited for the post of Part-time RADIOLOGICAL REGISTRAR for attendance up to 6 sessions weekly, for 1 year in the first instance. Candidates are required to hold a Diploma in Diagnostic Radiology.

Applications, stating age, qualifications, nationality, and appointments held, with dates, and copies of 3 testimonials, by 10th November, to—

KENNETH A. F. MILES, House Governor.

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. RESIDENT SURGICAL OFFICER (Junior Hospital Medical Officer grade) required immediately.

Apply Hospital Secretary (L), enclosing copies of 2 recent testimonials.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. HOUSE SURGEON (resident), vacant 2nd December.

Apply Hospital Secretary (L), enclosing copies of 3 recent testimonials.

CHARING CROSS HOSPITAL GROUP. Applications are invited for the following resident appointments, tenable at Wembley Hospital, for 6 months from 15th December, 1953 :—

* HOUSE PHYSICIAN.
* 2 HOUSE SURGEONS (general surgery).
HOUSE SURGEON (general surgical and gynæcological).

* Denotes pre-registration post.

Salary in accordance with the terms and conditions of service of hospital medical staff and subject to deduction for board-residence.

Application forms may be obtained from the undersigned and should be completed and returned by 18th November, 1953. FRANK HART, Secretary to the Board of Governors.

Wembley Hospital, Wembley, Middlesex.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from registered Women medical practitioners for the appointment of JUNIOR RESIDENT ASSISTANT PATHOLOGIST. Salary in accordance with the Ministry of Health scale for House Officers. The appointment is for 6 months in the first instance, duties to commence 1st December, 1953.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, as soon as possible.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from pre-registration and registered Women medical practitioners for the post of OBSTETRIC HOUSE SURGEON (recognised for the M.R.C.O.G.). Duties to commence 1st January, 1954. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 11th November, 1953.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from registered Women medical practitioners for the post of Full-time PATHOLOGICAL REGISTRAR (non-resident). Appointment for 1 year in the first instance, to commence 1st January, 1954. Salary in accordance with Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 11th November, 1953.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from pre-registration and registered Women medical practitioners for the post of FIRST HOUSE PHYSICIAN for Medicine and Pædiatrics, to become vacant 1st January, 1954. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 11th November, 1953.

FOREST GATE HOSPITAL, Forest-lane, E.7. Applications are invited for the resident post of HOUSE OFFICER (obstetrics), pre-registration second post. The appointment is for 6 months, commencing 1st December, 1953, and is recognised for the training of candidates for D.Obst.R.C.O.G.

Written applications, together with 2 references, should be received by the Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, not later than 12th November, 1953.

GROUP LABORATORY, MILE END HOSPITAL, Bancroft-road, London, E.1. RESIDENT ASSISTANT PATHOLOGIST (Senior House Officer). Previous experience an advantage, but not essential. Laboratory recognised for Diploma of Pathology, and is well equipped with excellent training facilities. Salary £670 p.a., less £156 p.a. for residence. Post tenable for 1 year in first instance.

Applications, stating age, nationality, qualifications and experience, together with names of 2 referees, to the Secretary, Stepney Group Hospital Management Committee, Raine-street, Wapping, E.1.

GUY'S HOSPITAL, S.E.1. Applications are invited for the appointment of REGISTRAR (first year) in the Department of Psychological Medicine (4 sessions per week). Duties to commence on 1st January, 1954.

Forms of application, obtainable from the Superintendent, Guy's Hospital, should be forwarded not later than 13th November, 1953.

GUY'S HOSPITAL. YORK CLINIC FOR PSYCHOLOGICAL MEDICINE. Required, RESIDENT HOUSE PHYSICIAN (Male) to commence duties on 1st December, 1953. The post, which is open to post-registration candidates only, offers good opportunities for postgraduate study. Salary in accordance with the terms and conditions of service for House Officers in the National Health Service. The appointment will be for 6 months in the first instance, and may be renewed for further such periods.

Applications, with copies of 2 testimonials, should be sent to the Superintendent, Guy's Hospital, London Bridge, S.E.1, on or before 21st November, 1953.

HACKNEY HOSPITAL, London, E.9. (807 Beds.) House SURGEON (pre-registration) required for 6 months from 1st December. Post recognised for F.R.C.S.

Apply, with copies of testimonials, to Group Secretary, Hackney Hospital, E.9, by 16th November, quoting HH/HS.

HACKNEY HOSPITAL, London, E.9. (General—807 Beds.) CASUALTY HOUSE OFFICER (6 months appointment) required, to act also as House Officer to the E.N.T. Department.

Applications from second or third post candidates should reach the Group Secretary, Hackney Hospital Management Committee, London, E.9, as soon as possible.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. CASUALTY OFFICER (whole-time, non-resident) required 14th December. Salary £670 p.a.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 16th November.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, N.W.8. Applications are invited from registered medical practitioners (Male) for the appointment of HOUSE SURGEON to the Midwifery and Gynæcology Departments and to be responsible for the Casualty Department. Post is now vacant. Applicants should preferably have been qualified in 1952. Appointment will be for a period of 6 months. Salary is at the rate of £350 p.a.

Applications should reach the Secretary as soon as possible, together with copies of 3 recent testimonials.

KING EDWARD MEMORIAL HOSPITAL, Ealing. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident), to Orthopædic, Casualty and Fracture Departments. Recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, dates and details of experience, together with copies of 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex. Closing date 17th November, 1953.

KING EDWARD MEMORIAL HOSPITAL, Ealing. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER as Deputy Resident Surgical Officer and House Surgeon to Senior Surgeon and Gynæcologist. Post recognised for F.R.C.S. Vacant 1st January, 1954.

Applications, stating age, qualifications with dates and details of experience, together with copies of 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 17th November, 1953.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. A vacancy occurs for RESIDENT ASSISTANT PHYSICIAN at the Country Branch, Arlesey, near Letchworth. Appointment for 1 year from 1st January, 1954, and renewable. Post graded as Senior Registrar.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned, from whom further particulars may be obtained, by 14th November, 1953.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. Applications are invited for the appointment of RESIDENT MEDICAL OFFICER. Appointment for 1 year from 1st January, 1954, and graded as Registrar.

Applications, stating age, qualifications, with dates, and previous appointments held, with copies of 3 testimonials, should be sent to the undersigned not later than 14th November, 1953. THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER to the Tuberculosis Dispensary Clinic at the Hospital. Experience in diagnosis and treatment of tuberculosis essential.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should be sent to the undersigned by 20th November, 1953.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1, invites applications for the post of REGISTRAR in General Medicine. A higher qualification, although desirable, is not essential. The appointment will be for 1 year in the first instance, at a salary of £775 p.a.

Applications (12 copies), giving the names and addresses of 3 referees, to be received by the House Governor by 7th December, 1953. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1, invites applications for the post of REGISTRAR to the Radiodiagnostic Department. Candidates must hold a Diploma in Radiology or Radiodiagnosis. The appointment will be for 1 year in the first instance, at a salary of £775 p.a.

Applications (12 copies), giving the names and addresses of 3 referees, to be received by the House Governor by 7th December, 1953. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications invited for following posts vacant 1st January, 1954 :—

SENIOR HOUSE OFFICER to Cardiac Department.
SENIOR HOUSE OFFICER to surgical outpatients.
SENIOR HOUSE OFFICER to Obstetrical and Gynæcological Department.
SENIOR HOUSE OFFICER to Receiving Room.
SENIOR HOUSE OFFICER to Venereal Diseases Department (now vacant).
SENIOR HOUSE OFFICER to medical outpatients (now vacant).

The Receiving Room post is for 6 months only, preference given to applicants who have held previous appointment at the Hospital.

Applications (6 copies) together with six copies of 3 recent testimonials should reach House Governor by 14th November, 1953. H. BRIERLEY, House Governor.

NATIONAL HEART HOSPITAL, Westmoreland-street, London, W.1. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Male). The appointment is for a period of 6 months from 1st January, 1954, but may be renewed for a further period not exceeding 6 months. The status and salary are either that of a Senior House Officer or Registrar and are in accordance with the national terms and conditions of service.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Friday, November 27th, 1953.

ROBERT G. E. WHITNEY, Secretary to the Board.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of REGISTRAR (whole-time) to the Lysholm X-ray Department at The National Hospital, Queen-square. This post usually carries the grade of Senior Registrar. Applicants should hold a Diploma in Diagnostic Radiology and have had experience in general radiology. The appointment will be for 1 year in the first instance.

Applications, with names of 3 referees, to be sent to the undersigned not later than 21st November, 1953.

H. EWART MITCHELL, Secretary.

The National Hospital, Queen-square, W.C.1.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. Temporary SENIOR REGISTRAR in Pathology (non-resident), required. Appointment for 3 months in the first instance, then on month-to-month basis. Applicants should have not less than 3 years experience in pathology and have good knowledge of hæmatology and morbid anatomy.

Applications, stating age, qualifications, experience, nationality, with copies of recent testimonials and/or names of 2 referees, to Group Secretary, immediately.

POPLAR HOSPITAL, East India Dock-road, E.14. (120 Beds.) Required, CASUALTY HOUSE SURGEON (first, second, or third post). Duties include inpatient, outpatient and casualty work. Post recognised for F.R.C.S. Vacant now.

Applications, stating age, nationality, and qualifications, to the Secretary.

POPLAR HOSPITAL, East India Dock-road, E.14. (120 Beds.) Required, HOUSE PHYSICIAN. Duties include inpatient, outpatient and casualty work. Post vacant 5th December. Recognised pre-registration post.

Applications, stating age, nationality and qualifications, to the Hospital Secretary.

POPLAR HOSPITAL, East India Dock-road, E.14. (120 Beds.) Required, HOUSE SURGEON. Duties include inpatient, outpatient and casualty work. Post recognised for F.R.C.S. Vacant 25th November. Recognised pre-registration post.

Applications, stating age, nationality and qualifications, to the Hospital Secretary.

PUTNEY HOSPITAL, Lower Common, S.W.15. House PHYSICIAN (resident) vacant 8th December. Open to registered practitioners and pre-registration candidates.

Apply Hospital Secretary (L), enclosing copies of 2 recent testimonials, by 20th November, 1953.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. RESIDENT SENIOR HOUSE SURGEON (obstetrics and gynæcology) for period of 1 year, vacant now. Registered practitioners only.

Applications, with full details and copies of 2 testimonials, to the House Governor.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Applications are invited for the post of SENIOR HOUSE OFFICER (ophthalmology, E.N.T., and radiotherapy). Salary £670 p.a., less £130 for residential emoluments.

Applications, stating qualifications, and experience, with copies of 3 recent testimonials, to be sent to the Hospital Secretary as soon as possible.

ROYAL FREE HOSPITAL. Applications are invited for the appointment of SENIOR REGISTRAR to the Gynæcological and Obstetric Department at the Royal Free Hospital. The post is full time and recognised under the Senior Registrar establishment. Duties to commence on 1st February, 1954. Candidates should be registered medical practitioners of not more than 10 years standing and Members of the Royal College of Obstetricians and Gynæcologists.

Formal application, together with the names of 3 referees, should be sent to the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 25th November, 1953.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of REGISTRAR to the Rheumatology Department of the Royal Free Hospital. Duties to commence 1st January, 1954, appointment for 1 year in the first instance. Candidates should be registered medical practitioners of not more than 10 years standing, and preferably members of the Royal College of Physicians. The post holds clinical responsibilities and some laboratory experience would be an advantage.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 20th November, 1953.

ROYAL FREE HOSPITAL. Applications are invited for the post of SENIOR REGISTRAR to the Infectious Diseases Department at the Royal Free Hospital. Duties to commence 1st January, 1954, appointment for 1 year in the first instance. Candidates should be registered medical practitioners of not more than 10 years standing and should be members of the Royal College of Physicians.

Formal applications, giving details of experience, &c., together with the names of 3 referees, should be sent to the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 21st November, 1953.

ROYAL CANCER HOSPITAL, Fulham-road, London, S.W.3. Applications are invited for the post of Part-time SENIOR REGISTRAR (surgical), 5 sessions per week, to begin duty on 1st January, 1954.

Forms of application are obtainable from the House Governor, to whom applications (together with copies of 3 recent testimonials) should be sent not later than 23rd November.

ROYAL CANCER HOSPITAL, Fulham-road, London, S.W.3. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON (resident). Salary £400–£450 p.a., according to experience. The post is tenable for 6 months as from 1st January, 1954.

Forms of application are obtainable from the House Governor to whom applications (together with copies of 3 recent testimonials) should be sent not later than 23rd November.

ST. MARY'S HOSPITAL, W.2. Applications from suitably qualified practitioners are invited for the post of Part-time CLINICAL ASSISTANT to the Physiotherapy Department. The grading of this post is Registrar and the successful applicant will be required to undertake 4 notional half-days per week as from a date to be arranged. The appointment will be for a first period of 12 months, the holder being eligible for reappointment.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 17th November, 1953.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Part-time OUTPATIENT SURGICAL ASSISTANT (graded Senior House Officer), for 4 notional half-days per week—i.e., Tuesday P.M., Wednesday A.M., Friday A.M., and Friday P.M. The appointment will be for a first period of 12 months, the successful candidate will be required to commence duties as soon as possible.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous and present appointments, together with the names and addresses of 3 referees should reach ALAN POWDITCH, House Governor, not later than 17th November, 1953.

ST. THOMAS'S HOSPITAL AND THE SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. (Joint appointment.) SENIOR MEDICAL REGISTRAR who will be assigned year by year either to St. Thomas's or to the Southampton Group of hospitals.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors, St. Thomas's Hospital, London, S.E.1, by 16th November, 1953.

ST. THOMAS'S HOSPITAL, London, S.E.1. Obstetric HOUSE PHYSICIAN at the General Lying-in Hospital, York-road, S.E.1, for 6 months from 17th December, 1953. Approved service for M.R.C.O.G.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 16th November, 1953.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. Required, REGISTRAR in Anæsthetics. Non-resident appointment on an annual basis.

Applications (7 copies), and names of 2 referees, to the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2. Closing date 28th November, 1953.

ST. ALFEGE'S HOSPITAL, Greenwich, S.E.10. Clinical ASSISTANT required for 1 session weekly in the Throat and Ear Department. Salary £175 p.a.

Applications and testimonials to Secretary, Greenwich and Deptford Hospital Management Committee, at above Hospital by 16th November, 1953.

ST. ANN'S GENERAL HOSPITAL, N.15. (756 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE PHYSICIAN (Senior House Officer) for duty in the Infectious Diseases Unit and other general duties, for a period of 6 months commencing 30th November, 1953.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, Tottenham, N.15, to be returned by 21st November, 1953.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Applications are invited for the post of HOUSE PHYSICIAN (pre- or post-registration). Post vacant 15th November, 1953. Tenable for 6 months. Salary, &c., in accordance with national scale.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, to be forwarded to the Medical Superintendent.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment at the Woolwich Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 21st November, 1953.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Medicine to fill a vacancy in the approved trainee establishment at the Lewisham Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 21st November, 1953.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy for a Whole-time ASSISTANT MEDICAL REGISTRAR (Registrar grade) on 18th February, 1954.

Further particulars and form of application, which must be returned not later than Monday, 7th December, 1953, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for 2 posts of SURGICAL REGISTRAR (£775–£890 p.a.) vacant 1st January, 1954. Higher surgical qualification desirable.

Applications, with names of 2 referees, to Administrator and Secretary by 21st November, 1953.

WANSTEAD HOSPITAL, Wanstead, E.11. Applications are invited for the post, now vacant, of CASUALTY OFFICER (graded as Senior House Officer). Salary £670 p.a., with a deduction of £120 p.a. for board, lodging, &c.

Applications, giving full particulars, together with copies of 2 recent testimonials, should be sent immediately to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. RESIDENT HOUSE SURGEON (pre-registration post). Appointment for 6 months from 1st December, 1953.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 2 testimonials, to Hospital Secretary by 17th November, 1953.

WEST LONDON HOSPITAL, Hammersmith-road, W.6. HOUSE OFFICER to Special Departments (pædiatric, E.N.T., ophthalmic, skin, dental), required 1st January.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, by 14th November.

ABERYSTWYTH GENERAL HOSPITAL. Mid Wales HOSPITAL MANAGEMENT COMMITTEE. A vacancy will occur for a HOUSE SURGEON at the above Hospital early in December, 1953.

Applications to the Secretary, General Hospital, Aberystwyth.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for Anæsthetics. Large general hospital recognised for D.A. 6 months appointment.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ABERDARE GENERAL HOSPITAL. (102 Beds.) Merthyr AND ABERDARE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER. The appointment, which is resident, is for a period of 6 months. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with full particulars should be sent to the Group Secretary, Merthyr and Aberdare Hospital Management Committee, St. Tydfil's Hospital, Merthyr Tydfil.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (pædiatrics) required at Ashton-under-Lyne General Hospital. Recognised for the D.C.H. Post vacant early November.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be forwarded to the Group Secretary, Astley-road, Stalybridge, Cheshire.

AYLESBURY. ROYAL BUCKINGHAMSHIRE AND ASSOCIATED HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Royal Buckinghamshire Hospital

SENIOR HOUSE OFFICER for Accident and Orthopædic Department vacant 17th January. Duties include charge of Casualty Department together with those of Senior Resident. Salary £670 p.a., less £140 p.a. for residence, &c.

Applications, with 2 testimonials, to Secretary-Superintendent as soon as possible.

Tindal General Hospital

HOUSE SURGEON (E.N.T.), Male or Female, vacant now. New department with high turnover and 4 Outpatient Clinics weekly. No casualty department. Recognised for F.R.C.S. and D.L.O. Post recognised for Pre-registration Service but registered practitioners are invited to apply. Applications for a locum appointment will be considered.

Applications, with 2 testimonials, to the Administrative Officer as soon as possible.

BARNSTAPLE. NORTH DEVON INFIRMARY. (110 Beds.) HOUSE PHYSICIAN (pre-registration). Post vacant 1st January, 1954.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a resident post of HOUSE SURGEON (recognised for pre-registration) at the North Lonsdale Hospital, Barrow-in-Furness, with surgical work under control of Consultant Surgeons. Post recognised for F.R.C.S. National conditions and salary scale.

Applications to the Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a post of HOUSE PHYSICIAN (recognised for pre-registration) at the North Lonsdale Hospital, Barrow-in-Furness, under supervision of Consultant Physician. National conditions and salary scale.

Applications to Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BEDFORD GENERAL HOSPITAL. (435 Beds.) Bedford GROUP HOSPITAL MANAGEMENT COMMITTEE. 2 RESIDENT HOUSE PHYSICIANS required (pre-registration posts) on 1st December, 1953.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be forwarded to the Group Secretary, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (435 Beds.) Bedford GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON required. Post vacant 20th November, 1953. Preference will be given to persons seeking pre-registration posts under the Medical Act, 1950. The appointment offers exceptional opportunity for general experience in a busy acute Surgical Unit.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be forwarded to Group Secretary, 3, Kimbolton-road, Bedford.

BEXHILL-ON-SEA. BEXHILL HOSPITAL. (62 Beds.) 2 HOUSE SURGEONS. Posts now vacant. (A small modern hospital on the South coast.) Considerable acute surgical work and busy Outpatient Department. Excellent all-round experience. National scale of salary.

Apply to Hospital Administrator.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (1059 Beds.) Applications invited for the post of CASUALTY OFFICER (Senior House Officer), resident or non-resident.

Applications, giving qualifications, experience, and age, with copies of 3 recent testimonials, to the Medical Superintendent.

BIRMINGHAM. ST. CHAD'S HOSPITAL, Hagley-road, BIRMINGHAM, 16. OBSTETRIC HOUSE OFFICER required. Salary according to approved scale. The post is recognised under the Medical Act, 1950, for Pre-registration Service, and by the Royal College of Obstetricians and Gynæcologists for the D.Obst.R.C.O.G.

Applications, stating age, qualifications, and experience, with recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. 2 SENIOR HOUSE OFFICERS in Anæsthetics (resident) required. Centred at Dudley Road Hospital (800 Beds), but will include duties and a period of residence at other hospitals in the Group. Appointments recognised for training for Diploma in Anæsthetics and F.F.A. R.C.S. Duties include list and emergency work in general surgery, E.N.T., obstetrics and gynæcology.

Applications with copies of 2 recent testimonials, to the Secretary, Hospital Management Committee, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE SKIN HOSPITAL, Inpatient DEPARTMENT, George-road, EDGBASTON, BIRMINGHAM, 15. Required, SENIOR HOUSE OFFICER or HOUSE OFFICER, according to experience. Inpatient Department is modern and well equipped, providing facilities for study of skin diseases. Successful applicant will be required to assist Consultant at outpatient clinics.

Applications, with copies of 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. QUEEN ELIZABETH HOSPITAL. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Registrar grade), for duty at the above Hospital, vacant shortly and tenable for 1 year in the first instance. Candidates must be registered medical practitioners, and have held a resident appointment.

Forms of application may be obtained from, and should be returned not later than 14th November, 1953, to, the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE QUEEN ELIZABETH HOSPITAL. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer) in the Department of Bacteriology and Clinical Pathology. This Officer will act as 1 of 3 blood bank officers in addition to routine work in the department. Previous experience in clinical pathology is not essential but applicants should have had hospital postgraduate experience. The appointment will be for 12 months from 1st January, 1954. Further particulars can be obtained from the Director of the Clinical Pathological Services.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him not later than 14th November, 1953.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN, Showell Green-lane, SPARKHILL, BIRMINGHAM, 11. RESIDENT GYNÆCOLOGICAL HOUSE SURGEON required for duty 7th January, 1954. The appointment is designated as a second appointment pre-registration post for the purpose of the Medical Act, 1950, and is recognised for the M.R.C.O.G.

Application forms obtainable from the House Governor at the above address, and to be returned not later than 21st November, 1953. G. A. PHALP, Secretary.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS AND THE BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications are invited for the joint whole-time appointment of NON-RESIDENT RADIOLOGICAL REGISTRAR (Senior Registrar grade). The duties will be apportioned at 5 sessions in the Teaching hospital and 6 sessions in the Dudley Road Hospital Group, mainly at Dudley Road Hospital. The appointment will be for 1 year in the first instance. Candidates must be registered medical practitioners, have had previous experience in the specialty and possess a Diploma in Radiology.

Forms of application may be obtained from the Secretary and Principal Administrative Officer, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned not later than 28th November, 1953.

BIRMINGHAM, 9. LITTLE BROMWICH HOSPITAL. Applications are invited from registered medical practitioners for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER for Infectious Diseases. Previous experience in infectious diseases essential. Post vacant 22nd November, 1953.

Applications, stating age and experience, enclosing copies of 2 recent testimonials, to the Physician-Superintendent.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(*a*) **Coventry Group of hospitals**

Whole-time REGISTRAR in General Surgery. Duties mainly at Coventry and Warwickshire Hospital (346 Beds—94 surgical). Post recognised for F.R.C.S. Resident.

(*b*) **Walsall Group of hospitals**

Whole-time REGISTRAR in General Medicine. Duties mainly at Manor Hospital (301 Beds) and St. John's Hospital (250 Beds). Resident.

(*c*) **Coventry Group of hospitals**

Whole-time REGISTRAR in Ophthalmology. Duties mainly at Coventry and Warwickshire Hospital (346 Beds). Experience specialty required and possession of D.O. an advantage. Non-resident.

(*d*) **South Warwickshire Group of hospitals**

Whole-time REGISTRAR in Anæsthetics. Duties mainly at Warneford General Hospital (207 Beds). Experience specialty essential. Resident.

(*e*) **Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry** (451 Beds)

Whole-time REGISTRAR in Orthopædics. Duties also at associated clinics. Resident.

(*f*) **South Warwickshire Group of hospitals**

Whole-time REGISTRAR in Orthopædics. Duties mainly at Warwick Hospital (352 Beds, including 52 orthopædic). Resident. Post recognised for F.R.C.S. Experience specialty essential, higher qualification an advantage.

(*g*) **Wolverhampton Royal Hospital** (310 Beds)

Whole-time RESIDENT CASUALTY OFFICER (Registrar). Recognised for F.R.C.S.

(*h*) **Birmingham, St. Margaret's Hospital** (1470 Beds)

Whole-time REGISTRAR in Psychiatry. Recognised for D.P.M. Resident or non-resident.

Application forms from Secretary, 10, Augustus-road, Birmingham, 15, to be returned before 23rd November, 1953.

BURY. FAIRFIELD GENERAL HOSPITAL. Bury and ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (pre-registration), Obstetrics and Gynæcology.

Apply, stating names of 2 referees, to—

H. WILKINSON, Group Secretary.

Bury General Hospital, Bury.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. (215 Beds.) HOUSE SURGEON (Male or Female). 2 posts now vacant. Recognised for F.R.C.S. The appointments will be for a period of 6 months of which 2 may be spent in the Burns Unit (Medical Research Council). The Hospital is the largest Traumatic Unit in the country and treats 50,000 new patients each year. Posts are open to registered practitioners and pre-registration applicants, and offer ample opportunity for practical experience in the management of all types of injury and teaching by the Consultant staff.

Applications, with copies of recent testimonials or names of 2 referees, to the Administrator.

BISHOP'S STORTFORD, HERTS. HAYMEADS HOSPITAL. (400 occupied beds. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for the appointment of a Whole-time Temporary REGISTRAR (anæsthetics) at the above Hospital. Post vacant immediately. Salary at rate of £775–£890 p.a., less £130 p.a. residential emoluments.

Applications, giving fullest details, together with copies of recent testimonials or the names of referees to the Hospital Secretary.

BISHOP'S STORTFORD, HERTS. HAYMEADS HOSPITAL. (400 occupied beds. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for a RESIDENT HOUSE OFFICER (surgical), first or second post held. Pre-registration post. Salary £350–£400 p.a., less £100 p.a. for residential emoluments. Appointment to commence as soon as possible.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or the names of referees, to the Hospital Secretary.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—medical, surgical, and maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for a RESIDENT HOUSE OFFICER (first or second post held). Salary £350–£400 p.a., less £100 p.a. for residential emoluments. Appointment to commence as soon as possible.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or the names of referees, should be sent to the Hospital Secretary, Haymeads Hospital, Bishop's Stortford, Herts.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. (492 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN vacant 1st December. The appointment is recognised for pre-registration purposes.

Applications to the Deputy Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, WESTBOURNE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON for E.N.T. and ophthalmic duties. In addition to the duties at the above Hospital, the successful candidate will be required to assist in E.N.T. Outpatient Clinics at Royal Victoria Hospital, Boscombe, Bournemouth and Poole General Hospital. The appointment is recognised for the D.O. and D.L.O. Diplomas.

Applications to the Deputy Hospital Secretary, Shelley-road, Boscombe, Bournemouth.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (492 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer) required for 16th November. The post is recognised for the D.A. and F.F.A.R.C.S. and is tenable for 12 months.

Applications to the Deputy Hospital Secretary.

BIDEFORD AND DISTRICT HOSPITAL. (51 Beds.) HOUSE OFFICER required. Flat available for married Officer.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BRADFORD ROYAL INFIRMARY.

HOUSE OFFICER (anæsthetics), vacant now.

HOUSE SURGEON (general and urology), vacant now.

Salary £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL.

HOUSE OFFICER (anæsthetics), vacant 1st December.

HOUSE PHYSICIAN.

Salary for either of above posts £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL.

SENIOR ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now. Salary £670 p.a., less £130 p.a. residential emoluments.

HOUSE SURGEON (general and plastic), vacant now.

HOUSE SURGEON (general and casualty), vacant now.

ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now.

Salary for above 3 posts £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, for all above posts, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRISTOL. FRENCHAY HOSPITAL. House Surgeon required to work in Plastic and Jaw Surgery Unit.

Applications, with full particulars, should be sent to the Group Secretary, Frenchay Hospital, Bristol.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT PATHOLOGIST (Senior House Officer grade) at Frenchay Hospital (519 Beds: General Medicine, General Surgery and Thoracic, Neurosurgical and Plastic Units for the South West). Post provides training in all branches of clinical pathology and is for 1 year from 1st December or as soon after as possible. Previous experience not essential. Some duties in connection with the Regional Blood Transfusion Service. Emergency work shared with another medical officer. The Laboratory is recognised for Diploma in Pathology. Salary £670 p.a., less £100 p.a. in respect of board-residence, &c., provided.

Applications, stating age, qualifications and previous posts, and quoting names of 2 referees, should reach the Group Secretary, Frenchay Hospital, Bristol, by 20th November, 1953.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. HOUSE SURGEON required in the Thoracic Surgery Department, which is the Regional Thoracic Surgery Centre (120 Beds) for the South West.

Applications, with full particulars, should be addressed to the Group Secretary, Frenchay Hospital, Bristol, quoting "Thoracic."

BRISTOL. SOUTHMEAD GENERAL HOSPITAL GROUP MANAGEMENT COMMITTEE. Applications are invited for the following appointments:—

Southmead Hospital, Bristol (571 Beds, including 133 maternity)

SENIOR HOUSE OFFICER (anæsthetics).

HOUSE OFFICER (anæsthetics).

Both appointments recognised for D.A.

Applications to be submitted to the Group Secretary, Southmead Hospital, Bristol.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. (544 Beds.) Applications invited for post of SENIOR HOUSE OFFICER for Surgical Tuberculosis Unit, comprising chiefly orthopedic tuberculosis, genito-urinary tuberculosis, and other non-pulmonary and combined lesions. Post tenable for 1 year. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE GROUP HOSPITALS. SENIOR HOUSE OFFICER (£670 p.a.) for duties in the E.N.T. Department of the Group Hospitals (78 Beds), vacant now. Recognised for F.R.C.S., and D.L.O.

Applications, with details of experience, &c., together with names and addresses of 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7, as soon as possible.

BRIGHTON, 7. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) CASUALTY HOUSE SURGEON (1 of 3), including duties with Orthopædic and Traumatic Unit. Pre-registration post and recognised for F.R.C.S. from 1954. Vacant now.

Applications, giving details of age, experience, &c., together with names and addresses of 2 referees, to be sent to the Administrative Officer.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (290 Beds.) **EAST ANGLIAN REGIONAL HOSPITAL BOARD.** ANÆSTHETIC REGISTRAR required at above Hospital, vacant middle January. Post recognised for D.A. and provides wide experience. A furnished flat is available outside the Hospital. Appointment for 1 year, renewable for second year.

Detailed applications, including age and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 23rd November, 1953. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

CARDIFF. GLAN ELY HOSPITAL, Fairwater. Cardiff HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident) required at the above Hospital (240 Beds) for treatment of pulmonary (Thoracic Unit) and all forms of non-pulmonary tuberculosis.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road Cardiff.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. Required, HOUSE SURGEON (resident) for 6 months, for general surgical duties and for duties in E.N.T. Department. Salary according to national scale.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be sent to the Secretary by 14th November.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in the Department of Physical Medicine (whole-time), non-resident, vacant 1st February, 1954. Appointment will be for 1 year in the first instance.

Forms of application, returnable within 14 days of the appearance of this advertisement, may be obtained from the Group Secretary at the above address.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (265 Beds.) GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON as a Senior or Junior House Surgeon grading. The above post, which is recognised for the F.R.C.S. Diploma, is now vacant. National Health Service salary and conditions.

Applications, together with copies of 2 testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (265 Beds.) SENIOR HOUSE PHYSICIAN. The above post becomes vacant in December. £670 p.a., together with National Health Service conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (265 Beds.) OBSTETRIC HOUSE SURGEON. The above post, which is recognised for the D.Obst.R.C.O.G., becomes vacant early in December. National Health Service salary and conditions.

Applications, together with 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (265 Beds.) PÆDIATRIC HOUSE PHYSICIAN. The above post, recognised for D.C.H., includes work in the ward and Outpatient Department and also provides experience in the care of the newborn. Opportunities exist for the study of preventive medicine among children and child guidance work. Post becomes vacant in January. National Health Service salary and conditions.

Applications, together with 2 testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CHELTENHAM GENERAL HOSPITAL. (220 Beds.) Applications are invited for the appointment of HOUSE PHYSICIAN, vacant in mid-November, 1953. The post is resident and the salary scale £350–£450 according to experience, less £100 residential emoluments. Terms and conditions of service in accordance with the National Health Service regulations.

Applications, together with at least 2 testimonials, should be sent to STANLEY T. DAVIS, Secretary, General Hospital, Cheltenham.

CHELTENHAM GENERAL HOSPITAL. (220 Beds.) CHELTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of HOUSE SURGEON. Salary at the rate of £350, £400, or £450 p.a., less £100 residential emoluments.

Applications, stating age, qualifications, experience, and enclosing copy testimonials, should be sent to the Secretary, Group Management Committee, General Hospital, Cheltenham.

CHELTENHAM. SUNNYSIDE MATERNITY HOSPITAL. CHELTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of RESIDENT OBSTETRIC OFFICER. The Hospital, which is recognised for the purpose of training for the D.Obst.R.C.O.G., has 63 Beds and deals with the majority of abnormal midwifery cases in North Gloucestershire. The appointment is for a period of 6 months and the salary will be £400 or £450 p.a., less £100 in respect of residential emoluments. The appointment will be vacant at the end of November, 1953.

Applications, stating age, qualifications and experience, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary, Cheltenham Group Hospital Management Committee, General Hospital, Cheltenham.

CHELMSFORD AND ESSEX HOSPITAL. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer), resident and tenable for 6 months. It offers excellent experience in the treatment of fractures and diagnosis of acute medical and surgical emergencies. Opportunity is given for the Casualty Officer to follow up his cases in the wards and to obtain operating experience in major theatre under the guidance of the Consultants or the Resident Surgical Officer. Off-duty time is generous and the post is one likely to suit both an Officer seeking a higher qualification in surgery or one intending General Practice. Salary £670 p.a., with £130 deduction for residential emoluments.

Apply Secretary, Chelmsford Group Hospital Management Committee, Chelmsford, and Essex Hospital, London-road, Chelmsford, Essex.

CHELMSFORD AND ESSEX HOSPITAL. (163 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). The post will become vacant on 22nd November, and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD. ST. JOHN'S HOSPITAL. House SURGEON (pre-registration, first, second, or third post). Duties commencing 21st November, 1953. The Hospital deals with a large number of routine and emergency surgical cases. The post is recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, together with copies of recent testimonials, should be received not later than 10th November by R. G. MORRISH, Secretary, Hospital Management Committee, Chelmsford Group, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. (202 acute beds.) RESIDENT HOUSE SURGEON required for 6 months appointment. Salary: first post £350, second post £400, third post £450 p.a., less £100 p.a. charge for residence. Post approved for pre-registration practitioners. Post recognised for F.R.C.S. 6 residents including Resident Surgical Officer and 3 House Surgeons. Vacant from 10th November, 1953.

Apply to the Senior Administrative Officer.

CHICHESTER, SUSSEX. ST. RICHARD'S HOSPITAL. (400 Beds.) Required, 2 HOUSE SURGEONS (pre-registration) for 6 months only in the first instance. (1) vacant 24th December (2) vacant 1st January, 1954. The man or woman appointed will work primarily in the surgical wards of the Hospital. Hospital recognised for F.R.C.S.

Applications, stating age, qualifications and experience, and giving the names of 2 persons to whom reference may be made, should be sent to the Surgeon-Superintendent, immediately.

COVENTRY AND WARWICKSHIRE HOSPITAL. (348 Beds.) SENIOR HOUSE OFFICER (fracture and orthopædic) required for Receiving-room duties. Recognised for F.R.C.S.

Applications to the Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COVENTRY AND WARWICKSHIRE HOSPITAL. (346 Beds.) HOUSE SURGEON (fracture and orthopædic) required. Recognised for F.R.C.S. Pre-registration candidates may apply.

Applications to the Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COVENTRY AND WARWICKSHIRE HOSPITAL. (346 Beds.) HOUSE PHYSICIAN required. Post offers wide experience in general medicine.

Applications to the Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COLCHESTER. ESSEX COUNTY HOSPITAL. (189 Beds.) Applications invited for post of HOUSE SURGEON (first, second, or third post) tenable for 6 months from 15th December, 1953. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane Colchester, Essex.

COLCHESTER. ESSEX COUNTY HOSPITAL. (189 Beds.) Applications invited for post of HOUSE OFFICER (surgical), first, second, or third post tenable for 6 months from 10th December, 1953. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COTTINGHAM, E. YORKS. Senior House Officer for Raywell Sanatorium (48 Beds) and JUNIOR HOSPITAL MEDICAL OFFICER for Castle Hill Sanatorium (221 Beds) to work under supervision of Consultant Chest Physician. Sanatoria part of Group with major thoracic surgery and Mass Radiography Units and laboratory facilities.

Application forms from Group Secretary, Hull B Hospital Management Committee, De la Pole Hospital, Willerby, E. Yorkshire.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) Locum Tenens ORTHOPÆDIC REGISTRAR required 26th November–9th December inclusive. Experience in orthopædics essential.

Apply, giving particulars of age, qualifications, and experience, to— GEORGE A. PAINES, Group Secretary, Hospital Management Committee.

General Hospital, Croydon.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. SURGICAL REGISTRAR (whole-time) commencing 1st January, 1954. Candidates should have good medical and surgical background, and possession of higher surgical qualification an advantage. There are 2 Surgical Teams at Hospital. Post recognised for F.R.C.S. examination

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned not later than 16th November.

CHESTER. BARROWMORE HOSPITAL, Great Barrow. (205 Beds.) Applications are invited from suitably qualified medical practitioners for the following appointments :—

JUNIOR HOSPITAL MEDICAL OFFICER (Male). Salary £700–£50–£1000 p.a., less £130 p.a. for residence.

SENIOR HOUSE OFFICER (Male). Salary £670 p.a., less £120 p.a. for residence.

The Hospital is modern in all respects and contains Regional Thoracic Surgical Unit. Applications from ex-patients considered.

Apply, sending 2 references or names of referees, to Secretary.

DERBY CITY HOSPITAL, Derby. House Surgeon (pre-registration) or SENIOR HOUSE OFFICER.

Applications, stating full details, together with copies of 2 recent testimonials, should be sent to the Medical Superintendent as soon as possible.

DERBY CITY HOSPITAL, Derby. House Physician (pre-registration) or SENIOR HOUSE OFFICER. Post vacant December.

Applications, stating full details, together with copies of 2 recent testimonials, should be sent to the Medical Superintendent as soon as possible.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) SENIOR HOUSE OFFICER (pædiatrics), vacant now.

Apply, giving 2 names for reference, to the Secretary, Derby No. 1 Hospital Management Committee, Babington-lane, Derby.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. DERBY AREA NO. 1 HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration) or SENIOR HOUSE OFFICER, required now.

Applications, with 2 names for reference, should be sent to the Secretary, No. 1 Hospital Management Committee, Babington-lane, Derby.

DORKING GENERAL HOSPITAL, Horsham-road, DORKING. (234 Beds.) SENIOR HOUSE OFFICER (surgical), vacant now. Excellent surgical experience.

Apply Medical Superintendent.

DOVER. ROYAL VICTORIA HOSPITAL. Applications are invited for the post of HOUSE SURGEON at the above Hospital. The post is recognised by the Royal College of Surgeons. Salary £350, £400, or £450 a year according to experience. A deduction of £100 a year will be made for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, to the Group Secretary, "Ash-Eton," Radnor Park West, Folkestone.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds.) DARLINGTON DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (resident), which post is recognised for the F.R.C.S. (Eng.). Salary in accordance with national scale.

Apply, giving age and references, to the undersigned forthwith. G. W. BECKWITH, Group Secretary.

DARLINGTON MEMORIAL HOSPITAL. Applications are invited from Male or Female practitioners with experience for the post of SURGICAL REGISTRAR (Senior House Officer) which is 1 of a surgical team of 2 Registrars and 1 House Officer responsible for surgical beds and casualty. The post is recognised for the F.R.C.S.(Eng.). Salary £670 p.a., deduction of £150 p.a. for full residential emoluments. The post is tenable for 12 months and is renewable annually.

Apply with references, stating age and experience, to— G. W. BECKWITH, Group Secretary.

DARTFORD HOSPITAL MANAGEMENT COMMITTEE.

HOUSE SURGEON (orthopædics) at the Southern Hospital, Dartford.

HOUSE OFFICER (E.N.T. and ophthalmology) at the Southern Hospital, Dartford.

Applications, stating age, qualifications, experience, nationality, and the names of 2 persons to whom reference may be made, to be sent to the Medical Superintendent of the hospital.

DONCASTER. HAMILTON ANNEXE, WESTERN HOSPITAL. (Recognised under the Regulations for the D.Obst. R.C.O.G. and M.R.C.O.G. (obstetrical experience) and approved for Pre-registration Service under the Medical Act, 1950.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of OBSTETRICAL HOUSE OFFICER (Senior House Officer or pre-registration post). The appointment is for 6 months and the successful candidate will be expected to take up duties early in December. National Health Service conditions and salary.

Applications, stating age, nationality, qualifications, and experience, and accompanied by copies of 2 testimonials, should be forwarded to the Secretary to the Committee, Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (Hospital recognised under new regulations for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT CASUALTY REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DONCASTER ROYAL INFIRMARY. DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners with the necessary experience for the appointment of ORTHOPÆDIC HOUSE SURGEON at above Infirmary, in the grade of Senior House Officer. Salary at the rate of £670 p.a., from which a deduction of £130 p.a. will be made for board, residence, &c.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with copies of 3 testimonials, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.

Doncaster Royal Infirmary.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments :—

Corbett Hospital, Stourbridge (106 Beds)

SENIOR HOUSE OFFICER (resident), casualty. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

SENIOR HOUSE OFFICER (resident), surgical, or HOUSE OFFICER (resident), surgical, pre-registration appointment. Post now vacant. Salary at appropriate rate less deduction for residential emoluments.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (Resident Anæsthetist). Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments. In addition to general surgery, experience is available in gynæcology and there is a major Orthopædic Unit. Regional Plastic Surgery Unit at this Hospital.

HOUSE OFFICER (resident), surgical, pre-registration appointment. Post now vacant. Salary at appropriate rate, less deduction of £100 p.a. in respect of residential emoluments.

Prestwood Sanatorium (200 Beds)

SENIOR HOUSE OFFICER (resident). Post now vacant. Salary £670 p.a., less £150 p.a. for residential emoluments.

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds.) Applications are invited from newly qualified medical practitioners seeking pre-registration posts under the Medical Act, 1950, for the resident post of HOUSE SURGEON to the Consultant in General Surgery (25 Beds) and the Consultant in E.N.T. Surgery (7 Beds). Busy general hospital, with easy access to London. Salary on national scale, less deduction for board and lodging.

Applications, with 2 testimonials, to reach the Group Secretary, Epping Group Hospital Management Committee, St. Margaret's Hospital, Epping, Essex, by 13th November, 1953.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgery) at the above Hospital, to fill an immediate vacancy. Appointment is for 6 months with possibility of extension for further 6 months. Busy general hospital with easy access to London. Salary on national scale less deduction for board, lodging, &c.

Applications immediately to the Group Secretary, Epping Group Hospital Management Committee, St. Margaret's Hospital, Epping, Essex.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. 2 RESIDENT HOUSE SURGEONS required for Orthopædics and Special Departments and general surgery. Vacancies now and 6th December. Pre-registration posts but registered practitioners may apply. 6 months appointment.

Applications, stating age, qualifications and experience with copies of 3 recent testimonials, should be sent immediately to Group Secretary at above address.

EPSOM, SURREY. WEST PARK HOSPITAL (for all stages of nervous and mental disorders). SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. WEST PARK HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for 2 appointments of REGISTRAR in Psychiatry at above Hospital. Candidates may be of either sex. A house on the Hospital estate or single residential quarters are available.

Applications (5 copies), should be made on forms to be obtained from the Secretary to the Hospital Management Committee at the Hospital, to whom they should be returned within 14 days of the appearance of this advertisement.

EAST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following HOUSE OFFICER appointments which are now vacant for the period ending 31st January, 1954.

Cumberland Infirmary, Carlisle (340 Beds)

1—General Surgery.
1—Orthopædics.
1—"Specials"—(E.N.T. and Eyes).

Applications, should be forwarded immediately to the Secretary, East Cumberland Hospital Management Committee, Cumberland Infirmary, Carlisle.

EDGWARE. NORTH LONDON BLOOD TRANSFUSION CENTRE, Deansbrook-road, EDGWARE, MIDDLESEX. JUNIOR HOSPITAL MEDICAL OFFICER required for full-time duty to work with mobile teams at donor sessions. Opportunity for training in clinical pathology exists.

Applications, stating age, qualifications and experience, together with names of 2 referees, to Director not later than 21st November, 1953.

FOLKESTONE. ROYAL VICTORIA HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN at the above Hospital. Salary £350, £400, or £450 a year, less £100 a year for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, should be forwarded to the Group Secretary, "Ash-Eton," Radnor Park West, Folkestone.

GLASGOW, N. STOBHILL GENERAL HOSPITAL. 2 HOUSE PHYSICIANS (resident). Male or Female, required 1st February, 1954, for Psychiatric Unit: 180 Beds, 1000 admissions yearly; acute treatable cases.

Apply now to Medical Superintendent.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (gynæcological), Male or Female, for duties at the above-named Hospital and Scartho Road Infirmary, Grimsby. The post is now vacant.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

GRIMSBY. SPRINGFIELD HOSPITAL. (Chest and Infectious Diseases.) (210 Beds.) GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of Locum SENIOR HOUSE OFFICER (medical). Salary in accordance with terms and conditions of service of hospital medical and dental staffs. In case of married applicant, house available. All forms of tuberculosis are treated in this Hospital and modern methods of therapy are available, including major thoracic surgery.

Applications, with names of 3 referees, should be submitted to the Hospital Secretary, Springfield Hospital, Scartho, Grimsby.

GREENOCK. RAVENSCRAIG (MENTAL AND GENERAL) HOSPITAL. RENFREWSHIRE MENTAL HOSPITALS BOARD. Applications are invited for a whole-time appointment as SENIOR HOUSE OFFICER (medical) at above Hospital. Salary and conditions of service in accordance with National Health Service regulations.

Applications in writing should be sent to the Physician-Superintendent as soon as possible.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) CASUALTY OFFICER required. The post is recognised for the F.R.C.S. and is that of Senior House Officer. 2 Casualty Officers are employed, who share the work of the department which is part of the Orthopædic and Traumatic Unit. Regular instruction is given in traumatic surgery and Casualty Officers take part in the work of the Fracture Clinics. Post vacant on 7th December and will be non-resident for the first 6 months.

Applications, with copies of testimonials, to the Hospital Secretary.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) RESIDENT HOUSE SURGEON required. The post is in general surgery and is recognised for the F.R.C.S. examination, tenable for 6 months and approved for pre-registration practitioners. The vacancy is to be filled as soon as possible.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary.

HALIFAX. ST. JOHN'S HOSPITAL. Applications are invited for the appointment of SENIOR HOUSE OFFICER at the above Hospital which has 382 Beds for geriatric cases and chronic sick patients. Good facilities for modern methods of treating geriatric cases. Pathological Laboratory, Physiotherapy and Occupational Therapy Departments at Hospital. Salary £670 p.a., with deduction of £130 p.a. for residence, &c.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (Male or Female), first or second post held, for general surgery, gynæcology and obstetrics. Pre-registration post; recognised under F.R.C.S. regulations. 6 months appointment. Salary at rate of £350 or £400 p.a. respectively, less £100 p.a. residential emoluments. Duties to commence 1st December, 1953.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) CASUALTY OFFICER (Male or Female), third post held, with attachment to Pædiatrician and Ophthalmic Consultant. Salary £450 p.a., less £100 p.a. residential emoluments. Appointment to commence 1st December, 1953.

Apply, with full details and references, to Secretary, Hertford County Hospital, Hertford, Herts.

HITCHIN HOSPITALS, Hitchin, Herts. Applications are invited for the post of RESIDENT HOUSE SURGEON at the North Herts Hospital, now vacant.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Director, Lister Hospital, Hitchin, Herts.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (151 Beds—Recognised by the Royal College of Surgeons and for Pre-registration Service.) Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical). Salary £350, £400, or £450 p.a., plus grant of £50 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications, experience, and nationality, with names and addresses of 3 referees, to Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HESWALL. CLEAVER HOSPITAL, Oldfield-road, HESWALL. (220 Beds.) CENTRAL WIRRAL GROUP. Applications are invited for the post of SENIOR HOUSE OFFICER. Excellent facilities for obtaining good knowledge of modern treatment of pulmonary tuberculosis in all its branches, including major surgery. Applicants should have held previous House appointments. Applications from ex-patient practitioners welcome. Salary £670 p.a., less £150 for emoluments. Terms and conditions of service for hospital medical and dental staffs (England and Wales) will apply.

Applications to be submitted to Physician-Superintendent immediately.

HESWALL. CLEAVER HOSPITAL, Oldfield-road, HESWALL. (220 Beds.) CENTRAL WIRRAL GROUP. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER. The post offers good experience in modern treatment of tuberculosis. The Hospital deals with acute cases, and minor and major surgery is carried out by members of the Liverpool Chest Surgical Unit. Applicants should have had previous experience in the treatment of tuberculosis and a knowledge of chest surgical procedure would be an advantage. Applications from ex-patient practitioners will be considered. Salary, terms and conditions of service for hospital medical and dental staffs (England and Wales) will apply.

Applications, including names of 3 referees, should be addressed to the Physician-Superintendent as soon as possible.

HEMEL HEMPSTEAD. WEST HERTS HOSPITAL. (169 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR required at above Hospital. Hospital may be visited by direct appointment.

Application form obtainable from, and returnable to, Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, by not later than 10 days after the appearance of this advertisement.

HOUNSLOW HOSPITAL, Staines-road, Hounslow, MIDDLESEX (General Acute—81 Beds) invite applications for appointment of RESIDENT HOUSE SURGEON; duties include Casualty Department, 6 months appointment. National Health Service salary and conditions of service.

Applications, stating qualifications, age, &c., with copies of up to 3 recent testimonials or names for reference, to the Hospital Secretary.

HOVE GENERAL HOSPITAL, Sackville-road, Hove, 3. HOUSE SURGEON AND CASUALTY OFFICER (recognised for F.R.C.S.). Post vacant immediately. Salary and conditions of service in accordance with national scale (£350–£450, less £100 p.a. for residential emoluments).

Applications, stating age, qualifications, experience, and naming 2 referees, to the Administrative Officer.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN required to commence duty on 1st December, 1953. The post is a pre-registration appointment and the salary is in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (447 Beds.) Applications are invited for the post of SENIOR HOUSE PHYSICIAN. There are 2 Junior House Physicians. Resident post, and vacant at the end of November. Salary £670 p.a., less £130 for emoluments.

Applications to be forwarded to the Secretary, Hull A Group Hospital Management Committee.

HULL. KINGSTON GENERAL HOSPITAL. (447 Beds.) Applications are invited for the appointment of SURGICAL HOUSE OFFICER (mainly gynæcology and orthopædics); recognised pre-registration appointment. Salary £350, £400, or £450 according to experience. The post is resident and tenable for 6 months.

Applications to be forwarded to the Secretary, Hull A Group Hospital Management Committee.

HULL. KINGSTON GENERAL HOSPITAL. (447 Beds.) Applications are invited for the appointment of HOUSE SURGEON (recognised for the F.R.C.S. and pre-registration appointment). Salary £350, £400 or £450 according to experience. The post is resident and tenable for 6 months.

Applications to be forwarded to the Secretary, Hull A Group Hospital Management Committee.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic), post vacant now. National scale of salary.

Apply to Hospital Administrator.

ISLEWORTH, MIDDLESEX. WEST MIDDLESEX HOSPITAL. (1145 Beds, plus Annexe 66 Beds and Cots.) Whole-time OBSTETRICAL AND GYNÆCOLOGICAL REGISTRAR required for 1 year in first instance. Candidates may visit Hospital by appointment with Medical Director.

Application forms obtainable from and returnable to Secretary, South West Middlesex Group Hospital Management Committee, West Middlesex Hospital, Isleworth, by 17th November, 1953.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (resident), Pædiatric Unit. (Male or Female.) Must have held appointments as House Surgeon/Physician. Appointment for 6 months counting for qualification D.C.H. Duties include care of newborn and prematures in Maternity Department, care of infants and children in Children's Department, and attendance at Children's Outpatient Clinics.

Applications, stating age, nationality, qualifications with dates and details of experience, together with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 17th November, 1953.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the General Consultant Surgeon. The post is recognised for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, stating age, nationality, experience, and copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) EAST ANGLIAN REGIONAL HOSPITAL BOARD. SENIOR MEDICAL REGISTRAR required at above Hospital. Applicants should have had wide experience in general medicine and preference will be given to holders of a higher qualification. House available outside the Hospital. Appointment for 1 year in the first instance, subject to renewal thereafter on an annual basis.

Applications, stating age, qualifications, details of previous and present appointments, together with names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 23rd November, 1953. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

ILFORD, ESSEX. KING GEORGE HOSPITAL. There will be a vacancy for a HOUSE PHYSICIAN at the above Hospital on 5th December, 1953. (Pre-registration.) The post will be tenable for 6 months.

Applications, giving full particulars, and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

G. AUSTIN HEPWORTH, Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

LANCASTER. ROYAL LANCASTER INFIRMARY. (230 Beds.) RESIDENT SENIOR HOUSE OFFICER (orthopædics). Post recognised for F.R.C.S. and the successful applicant will work with an Orthopædic and Traumatic Specialist Unit. Post vacant November and normally tenable for 1 year.

Applications, with names of 2 referees, to be addressed to the Secretary, Royal Lancaster Infirmary.

LANCASTER. ROYAL LANCASTER INFIRMARY. MANCHESTER REGIONAL HOSPITAL BOARD. LANCASTER AND KENDAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SURGICAL REGISTRAR at the above Infirmary. The post will be vacant 16th November.

Applications, stating age, qualifications, and details of present and previous experience, together with the names of 3 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

LANCASTER. ROYAL LANCASTER INFIRMARY. MANCHESTER REGIONAL HOSPITAL BOARD. LANCASTER AND KENDAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT MEDICAL REGISTRAR at the above Infirmary. The post will be vacant 1st March, 1954.

Applications, stating age, qualifications, and details of present and previous experience, together with the names of 3 referees, to the Group Secretary, Royal Lancaster Infirmary, Lancaster.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON (gynæcology). The appointment, although recognised as a pre-registration House post, is suitable for a registered medical practitioner and recognised by the Royal College of Obstetricians and Gynæcologists for Membership.

Applications, with copy of 1 testimonial and names of 2 referees, should be forwarded to the Administrative Medical Officer, St. James's Hospital, Leeds, 9, as soon as possible.

LEEDS. SEACROFT HOSPITAL, York-road, Leeds. Applications invited for posts of HOUSE PHYSICIAN for Pædiatric Wards. 2 vacancies 1st November.

Full details and references to Chief Administrative Officer as soon as possible.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of General Medicine, General Surgery and Psychiatry.

Suitably experienced practitioners interested in such appointments are invited to communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEICESTER ISOLATION HOSPITAL AND CHEST UNIT, Groby-road, LEICESTER. (328 Beds.) Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER (surgical). Salary £670 p.a., less £150 p.a. residential emoluments. The appointment is tenable for 6 months and may be extended for a further period of 6 months. Experience will be gained in all branches of thoracic surgery, including cardiac surgery.

Applications, giving age, qualifications, dates, &c., and copies of 2 recent testimonials, to be forwarded as soon as possible to the Physician-Superintendent, at the above Hospital.

LEICESTER. TOWERS MENTAL HOSPITAL. (1168 Beds.) Applications are invited for the whole-time post of JUNIOR HOSPITAL MEDICAL OFFICER. Salary £700–£50–£1000 p.a. There is ample opportunity for experience in all branches of psychiatry including outpatient work and the Hospital is recognised for D.P.M. experience. Accommodation will be available for a married applicant and an appropriate charge will be made. Candidates must have completed their service with H.M. Forces.

Applications, giving age, nationality, and full details, with the names of 2 referees, to be sent to the Medical Superintendent as soon as possible.

LIVERPOOL, 20. BOOTLE HOSPITAL. The following appointments are vacant :—

1 HOUSE PHYSICIAN.
1 HOUSE SURGEON.

Provisionally registered medical practitioners may apply.

Applications to Secretary, Walton Hospital, Liverpool, 9.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a temporary post as ANÆSTHETIC REGISTRAR for the period to 30th September, 1954. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 21st November, 1953, on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL LIVERPOOL CHILDREN'S HOSPITAL. Applications are invited for a post of SENIOR CASUALTY OFFICER (Senior House Officer grade) for the period 1st January–31st December, 1954. The post may be resident or non-resident.

Apply by 18th November, 1953, on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL SOUTHERN HOSPITAL. Applications are invited for a post as CASUALTY OFFICER (House Officer grade) for the period to 28th February, 1954. The post is open to registered practitioners (resident or non-resident) and to pre-registration applicants.

Apply as soon as possible with full details to the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL, 5. JOHN BAGOT HOSPITAL. Junior HOSPITAL MEDICAL OFFICER required. Duties entail day-to-day responsibility for patients at the John Bagot Hospital (convalescent annexe to Walton Hospital) and at Westminster House (geriatrics). The successful candidate will reside in the John Bagot Hospital. This post is suitable for a candidate studying for a higher qualification, and opportunity will be given for experience in a selected specialty at Walton Hospital.

Application forms from Secretary, Walton Hospital, Liverpool, 9.

LLANELLY HOSPITAL. (164 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident post of SENIOR HOUSE OFFICER for work in the Surgical Unit of the above Hospital.

Full particulars, stating age, qualifications and experience, should be addressed to—

O. C. HOWELLS, Group Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

LLANELLY HOSPITAL. (164 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER for duty in the E.N.T., Ophthalmic, and Gynæcological Departments.

Full particulars, stating age, qualifications and experience, should be addressed to the Group Secretary, Glantawe Hospital Management Committee, St. Helen's-road, Swansea.

O. C. HOWELLS, Group Secretary.

LOUTH, LINCS. COUNTY INFIRMARY. (200 Beds.) (Recognised training hospital for F.R.C.S.) Applications are invited for the resident post of SENIOR HOUSE OFFICER (surgical) now vacant. Salary £670 p.a., less £150 for residential emoluments.

Applications, giving full particulars, with names of 2 referees, should be addressed to the Hospital Secretary.

LOUTH, LINCS. COUNTY INFIRMARY. (200 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON now vacant. The post is recognised for the F.R.C.S. examination and Pre-registration Service.

Applications, giving full details, together with the names of 2 referees, should be addressed to the Hospital Secretary.

MERTHYR GENERAL HOSPITAL, Merthyr Tydfil. (120 Beds.) (Approved for Pre-registration Service under the Medical Act, 1950—Recognised for F.R.C.S. Eng.) MERTHYR AND ABERDARE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON. The appointment, which is resident, is for a period of 6 months. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications with full particulars should be sent to the Group Secretary, Merthyr and Aberdare Hospital Management Committee, St. Tydfil's Hospital, Merthyr Tydfil.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). RESIDENT HOUSE SURGEON (general surgery). Post vacant. Recognised for pre-registration.

Apply to the Hospital Secretary.

LUTON, BEDS. ST. MARY'S HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN at St. Mary's Hospital, Luton (Chronic Sick Annexe of the Luton and Dunstable Hospital—129 Beds), vacant 21st November, 1953. The post includes certain duties at the Luton and Dunstable Hospital.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, should be sent to the Secretary, Luton and Hitchin Hospital Management Committee, St. Mary's Hospital, Luton, Beds.

MARKET DRAYTON (near), SALOP. CHESHIRE JOINT SANATORIUM. (305 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer or Senior House Officer, according to experience). Post offers exceptional experience in the treatment of pulmonary tuberculosis.

Applications to the Medical Superintendent at the Sanatorium.

MAIDSTONE (near). LENHAM SANATORIUM. (172 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER at Lenham Sanatorium, near Maidstone. The Sanatorium has 172 Beds for the treatment of pulmonary tuberculosis. Salary £670 a year, with a deduction of £150 a year for residential emoluments. Appointment for 12 months.

Applications to Physician-Superintendent, Lenham Sanatorium, near Maidstone.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. There are 55 E.N.T. Beds and 6 specialist operating sessions each week. Valuable experience is available and the post is recognised for the purposes of the F.R.C.S. and the D.L.O. Salary will be £670 a year less £150 a year for residential emoluments.

Applications immediately to the Administrative Office, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (135 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON. Post recognisable for the F.R.C.S.(Eng.). Salary £670 a year, with deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MANSFIELD AND DISTRICT GENERAL HOSPITAL. (207 Beds.) MANSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (pre-registration or Senior House Officer post). Post recognised for F.R.C.S. examinations.

Applications, stating age and qualifications, together with copies of 2 recent testimonials, to be forwarded to Group Secretary, Mansfield Hospital Management Committee, Crow Hill-drive, Mansfield.

MANSFIELD. RANSOM SANATORIUM. Nottingham NO. 5 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER. The Sanatorium contains 185 Beds for the treatment of pulmonary tuberculosis in men, women, and children, including a modern Thoracic Surgery Unit. Salary £670 p.a., less £150 for full residential emoluments, which include a comfortable flat.

Applications, stating age, qualifications, and experience, and enclosing copies of 2 recent testimonials, to be sent to the Group Secretary, Ransom Sanatorium, Rainworth, near Mansfield.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the non-resident post of REGISTRAR in Thoracic Surgery, to the Blackpool and Fylde Group of hospitals, with main duties at Victoria Hospital, Blackpool.

Applications, together with copies of 2 recent testimonials, should be sent to the Group Secretary, Blackpool and Fylde Hospital Management Committee, Victoria Hospital, Blackpool.

MANCHESTER REGIONAL HOSPITAL BOARD AND THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS invite applications for the post of NON-RESIDENT SENIOR REGISTRAR in Pathology. Facilities for training in all branches of pathology will be provided, both in Teaching and non-Teaching Hospitals. The successful applicant will commence his duties at the Crumpsall Hospital Group Laboratory.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names of 3 referees, by 17th November, 1953.

MANCHESTER REGIONAL HOSPITAL BOARD AND THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS invite applications for the post of NON-RESIDENT SENIOR REGISTRAR in Venereal Diseases, tenable mainly at St. Luke's Hospital, Manchester, and at the Manchester Royal Infirmary. The person appointed may, on occasions, be required to work in other hospitals and clinics in the Manchester Region. Higher qualification desirable.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names of 3 referees, by 24th November, 1953.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of Whole-time REGISTRAR in Diagnostic Radiology to the West Manchester Hospital Management Committee. Primarily for duty at Park Hospital, Davyhulme, but with duties at other Group Hospitals. Resident or non-resident, post vacant 31st December, 1953. 12 months appointment subject to renewal.

Forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of OBSTETRICAL HOUSE SURGEON to a maternity unit operating temporarily in the Whitworth Park branch of the above named hospital, vacant 1st January, 1954. The post is supernumerary to the establishment recognised for training purposes by the Royal College of Obstetricians and Gynæcologists. Previous obstetrical experience is desirable. An opportunity exists for a limited amount of gynæcological training during tenure of the post. National scale.

Application forms, which may be obtained from the undersigned, to be returned no later than 23rd November, 1953.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER, 19. THE DUCHESS OF YORK HOSPITAL FOR BABIES. MANCHESTER BABIES' AND CHILDREN'S HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN (Male or Female) for 6 months from 1st December. The Hospital is associated with Manchester University for teaching purposes.

Applications, with copies of 3 testimonials, to be sent to the Administrative Officer of the Hospital by 14th November, 1953.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—426 Beds.)

1 SENIOR HOUSE OFFICER (general medicine), vacant 31st December, 1953.

Forms from Secretary.

MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT ANÆSTHETIST for joint duties at the Kent County Ophthalmic and Aural Hospital, and the West Kent General Hospital, Maidstone (total Beds 248). The post, which is of Senior House Officer grade, will be vacant on 1st January, 1954, and carries a salary of £670 a year, less £150 for residential emoluments. Excellent experience under Consultant Anæsthetists is available, and the post is recognised for the F.F.A.R.C.S. examination.

Applications, stating age, nationality, qualifications and experience, together with the names of 2 suitable referees, should be forwarded to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone.

NEWPORT, I.W. ST. MARY'S HOSPITAL. (365 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Surgery. Salary £670 p.a. Applications are invited from registered medical practitioners.

HOUSE SURGEON. Post approved for Pre-registration Service. National salary scale and conditions. Vacant now.

Applications, stating age, nationality, qualifications, and experience, together with the names of 2 referees, to be sent as soon as possible to Group Secretary, Hospital Management Committee Headquarters, Clatterford House, Carisbrooke, I.W.

NEWPORT, I.W. ST. MARY'S HOSPITAL. (365 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN. Post approved for Pre-registration Service. National salary scale and conditions. Vacant 1st December, 1953.

Applications, stating age, nationality, qualifications and experience, together with the names of 2 referees, to be sent to the Group Secretary, Hospital Management Committee Headquarters, Clatterford House, Carisbrooke, I.W., as soon as possible.

NEWPORT, MON. ROYAL GWENT HOSPITAL. (260 Beds.) SENIOR HOUSE OFFICER (non-resident) in General Surgery required, based here but working also at neighbouring hospitals with the Consultant. The successful candidate will receive a thorough training and the post offers excellent experience.

Write, quoting 2 referees, to T. A. JONES.

64, Cardiff-road, Newport, Mon.

NEWPORT, MON. ROYAL GWENT HOSPITAL. (260 Beds. Recognised D.A. and F.F.A.R.C.S.) SENIOR HOUSE OFFICER in Anæsthetics (non-resident) required 1st January. The successful candidate will receive a thorough training in this speciality and previous experience is not essential. Post based at this Hospital, but will attend neighbouring hospitals as well with Consultants. Good experience in anæsthesia available.

Write, quoting 2 referees, to T. A. JONES.

64, Cardiff-road, Newport, Mon.

NEWCASTLE UPON TYNE. WALKER GATE HOSPITAL. (326 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER for duties concerned with paediatric and fever cases and routine work in acute E.N.T. ward. It will be desirable for candidates to have had experience in the above department. Unfurnished house available if desired. Salary in accordance with the National Health Service terms and conditions of service.

Applications, with testimonials or the names of 2 referees, to be sent to the Secretary, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE GROUP. (Main Paediatric beds; Newcastle General—84 Beds; Hospital for Sick Children—68 Beds.) REGISTRAR PÆDIATRICIAN (whole-time) required for 1 year, in the first instance, but may be renewed for a further period. Salary scale £775–£890 p.a. The Children's Department at the Newcastle General Hospital is closely linked with, and shares staff with, the University Department of Child Health and the Department of Child Health of the Teaching Hospital. The person appointed will have the opportunity of sharing in the activities of these departments and of teaching students. Appointment to date from 18th January, 1954.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEWCASTLE HOSPITAL MANAGEMENT COMMITTEE GROUP. REGISTRAR E.N.T. SURGEON (whole-time) required for the E.N.T. Hospital, Rye Hill, Newcastle (35 Beds), &c. Appointment for 1 year in the first instance and may be renewed for a further year after review. Salary scale £775–£890. Single accommodation available.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. ROYAL INFIRMARY, SUNDERLAND. (300 Beds.) SURGICAL REGISTRAR to act as Resident Surgical Officer. Salary £775–£890. The post is recognised for the F.R.C.S. examination, and will be tenable up to 31st August, 1954, in the first instance. Single accommodation available.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. The resident post of SENIOR HOUSE OFFICER (Chest Unit) becomes vacant on 1st November, 1953, and is tenable for 1 year.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 16th November, 1953.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) Applications are invited for the resident post of SENIOR HOUSE OFFICER (Orthopædic Department), which is now vacant. The appointment is tenable for 12 months in the first instance.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 16th November, 1953.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER for the Casualty Department. Salary (less £150 emoluments) and conditions of service in accordance with those laid down by the Ministry. Duties to commence on or about 30th December, 1953.

Applications, stating age, qualifications and experience, together with copies of testimonials to be sent to—
General Hospital, Nottingham. HENRY M. STANLEY.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of ORTHOPÆDIC AND FRACTURES SENIOR HOUSE OFFICER. The post offers exceptional experience in traumatic and orthopædic surgery. Duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations. If resident £150 deducted for emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—
HENRY M. STANLEY, Secretary.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON for General Surgery, Urology and Ophthalmology. Recognised for the Final F.R.C.S. in General Surgery and recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, Middlesex, by 25th November, 1953.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN to the Radiotherapy Department. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, Middlesex, by 25th November, 1953.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN for General Medicine and Neurology. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, Middlesex, by 25th November, 1953.

NEATH GENERAL HOSPITAL, Neath. (412 Beds.) MID GLAMORGAN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON. This Hospital is recognised for the F.R.C.S., D.C.H., D.A., M.R.C.O.G., approved by the General Medical Council under Section 2 of the Medical Act, 1950, and has a panel of distinguished full-time and visiting Consultants.

Applications, naming 2 referees, to be addressed to the Group Secretary of the Committee, 8, Wind-street, Neath.

NEWTON ABBOT HOSPITAL. (General Section—65 Beds.) RESIDENT SENIOR HOUSE SURGEON (Male or Female) required immediately. Married quarters available.

Applications, stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, 62/64, East-street, Newton Abbot, S. Devon.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Applications invited for post of SENIOR HOUSE OFFICER (Anæsthetic Department), commencing mid-December. Recognised for D.A. Appointment to 31st March, 1954, in first instance. Deduction of £100 a year for residential emoluments.

Applications, enclosing copies of 3 recent testimonials, as soon as possible to S. G. HILL, Superintendent.

NUNEATON. MANOR HOSPITAL. (139 Beds.) House PHYSICIAN (32 general medical beds). Pre-registration candidates may apply.

Applications to the Hospital Secretary.

NUNEATON. MANOR HOSPITAL. (139 Beds.) House SURGEON required for general surgical duties including E.N.T. and ophthalmic work. Recognised for F.R.C.S. and pre-registration.

Applications to the Hospital Secretary.

NUNEATON. GEORGE ELIOT HOSPITAL. (289 Beds.) PÆDIATRIC HOUSE PHYSICIAN required (35 Beds). Pre-registration post. Recognised for D.C.H., includes supervision of babies in Maternity Ward.

Applications to the Hospital Secretary.

NEWARK GENERAL HOSPITAL. Nottingham No. 1 HOSPITAL MANAGEMENT COMMITTEE. Whole-time RESIDENT MEDICAL OFFICER with general duties required at Senior House Officer rate of salary. This post offers excellent experience to anyone preparing to enter general practice. The Hospital has a busy Outpatient Department. Appointment for 1 year in first instance.

Apply to Secretary, General Hospital, Nottingham, giving age, nationality, qualifications and present and previous appointments and names of 3 referees.

ORPINGTON HOSPITAL, Orpington, Kent. Resident HOUSE PHYSICIAN (Tuberculosis Unit, 60 Beds—30 male and 30 female). Post vacant 1st January, 1954. Affords good clinical experience in the diagnosis and treatment of acute and chronic pulmonary tuberculosis. Offers excellent opportunity for studying for higher qualifications, with access to clinical material in the general medical and surgical wards of the Hospital. Ex-patient medical officer would be favourably considered.

Apply Physician-Superintendent.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of EMERGENCY OFFICER for locum duty in all departments, commencing 23rd November, 1953. Senior House Officer grade if qualifications suitable.

Apply, stating age, qualifications and experience, together with names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford.

OXFORD. UNITED OXFORD HOSPITALS. Oxford REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the post of FIRST ASSISTANT (Senior Registrar) to the Accident Service, United Oxford Hospitals. The post will be interchangeable with that of Resident Surgical Officer (Senior Registrar), Wingfield Morris Orthopædic Hospitals, and the period of tenure will be approximately equally divided between the 2 posts. Candidates should be Fellows of 1 of the Royal Colleges of Surgeons. Experience in both branches of orthopædics is essential.

Applications, on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 21st November, 1953.

OXFORD. UNITED OXFORD HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR in Radiology at the United Oxford Hospitals. A higher qualification in general medicine is desirable. The appointment will be for 1 year in the first instance and eligible for extension. There is no local candidate.

Applications on forms obtainable from the Secretary, Joint Registrar Committee, 43, Banbury-road, Oxford, to reach him by 21st November.

OXFORD. UNITED OXFORD HOSPITALS. Applications are invited for the post of NON-RESIDENT SENIOR REGISTRAR in Pædiatrics to the United Oxford Hospitals from 1st February, 1954, or earlier. Appointment will be for 1 year in the first instance and eligible for extension to normal tenure. A higher medical qualification is desirable.

Applications on forms obtainable from Secretary, Joint Registrar Committee, 43, Banbury-road, Oxford, should reach him by 27th November.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, Greenbank Road. Applications invited from registered dental practitioners for the appointment of RESIDENT DENTAL HOUSE SURGEON, vacant November, 1953. This appointment is recognised by the Royal College of Surgeons as fulfilling the requirements of candidates for the Fellowship of Dental Surgery.

Applications, stating age, nationality, and experience, together with copies of 3 recent testimonials, should be sent as soon as possible to— ARTHUR R. CASH, Group Secretary.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Applications are invited from registered medical practitioners for the appointments of :—

(1) SENIOR HOUSE OFFICER in Surgery, Devonport Hospital, vacant 8th December, 1953, recognised for the Fellowship of the Royal College of Surgeons.

(2) HOUSE SURGEON, Devonport Hospital, vacant 1st December, 1953.

(3) SENIOR HOUSE OFFICER to Casualty and Traumatic Department, Greenbank Road Hospital, vacant immediately.

(4) RESIDENT ANÆSTHETIST, Greenbank Road Hospital, vacant immediately, recognised for the D.A.

(5) HOUSE SURGEON, Greenbank Road Hospital, vacant immediately, recognised for the Fellowship of the Royal College of Surgeons.

(6) HOUSE PHYSICIANS, 2 posts, both vacant 1st January, 1954, Greenbank Road Hospital.

(7) HOUSE SURGEON, Freedom Fields Hospital, vacant 1st January, 1954, recognised for the Fellowship of the Royal College of Surgeons.

(8) PÆDIATRIC HOUSE PHYSICIAN, Freedom Fields Hospital, vacant 1st January, 1954, recognised for the D.C.H.

Applications, stating age, nationality, qualifications and experience, with the names of 3 referees, to be sent to the undersigned as soon as possible.
ARTHUR R. CASH, Group Secretary.
7, Nelson-gardens, Stoke, Plymouth.

PETERBOROUGH. THE MEMORIAL HOSPITAL, AND OBSTETRIC ANNEXES. PETERBOROUGH AND STAMFORD HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (obstetrics and gynæcology). Applications are invited for this position. There are 56 obstetric beds and a busy Gynæcological Department. The Unit consists of a Consultant, Registrar, and 2 House Officers.

Apply Secretary, Memorial Hospital, Peterborough.

PETERBOROUGH MEMORIAL HOSPITAL. East ANGLIAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR at above Hospital. The successful candidate will be required to share duties in Casualty Department. Post offers wide experience. Appointment for 1 year, renewable for second year.

Detailed applications, including age and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 23rd November, 1953. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MON. (115 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (surgical) required. This is the senior resident post, and offers good practical experience. 2 House Surgeons and a House Physician also resident. Salary £700–£50–£1000, less £150 board-residence.

Write, stating age, experience and 2 referees, to—
64, Cardiff-road, Newport, Mon. T. A. JONES.

PONTEFRACT GENERAL INFIRMARY. 1 Pre-registration HOUSE POST (surgical) now vacant. Excellent experience. 4 residents. Salary £350, less deduction for emoluments.

Applications, giving full details of experience, &c., to the Secretary, Pontefract and Castleford Hospital Management Committee, Great Northern House, Salter-row, Pontefract, Yorks.

PONTEFRACT (near), YORKS. CHEQUERFIELD HOSPITAL. HOUSE SURGEON required. This Hospital receives postoperative cases from Pontefract General Infirmary, of which it is an annexe. Will be responsible for all surgical and orthopædic beds at this hospital, and required to carry out operating work as allocated by Pontefract Infirmary. Married quarters available.

Applications to Secretary, Pontefract and Castleford Hospital Management Committee, Gt. Northern House, Salter-row, Pontefract, Yorks.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL, CHURCH VILLAGE. (316 Beds. Committee's Base Hospital serving population of 177,000.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (psychiatry). The post will offer experience and training in adult and child psychiatry and in psychosomatic medicine. Opportunities will be available for learning methods of clinical research and for study for the D.P.M. examination. Any further particulars will be furnished on request.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent as soon as possible to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL, CHURCH VILLAGE. (316 Beds and large Outpatient Department. 75 Adult medical beds with Registrar, Senior House Officer and 2 Intern House Physicians. Committee's base hospital serving population of 177,000. Recognised for D.Obst.R.C.O.G., D.C.H., and D.A.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (medical). The person appointed will perform duties at other hospitals in the Group, as required.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

POOLE GENERAL HOSPITAL, Poole, Dorset. Bourne-MOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE SURGEONS (pre-registration) required. Posts vacant on 7th November, 1953, and 14th December, 1953, respectively. The Hospital is recognised for the F.R.C.S. and F.R.C.S.E.

Applications to the Hospital Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointment :—

Queen Alexandra Hospital (with 126 surgical beds)
SENIOR HOUSE SURGEON.

Applications, stating age, experience and qualifications, and names of 2 referees, should be submitted as soon as possible to—
35, Grove-road South, Southsea. E. H. HURST.

READING AREA DEPARTMENT OF MEDICINE. Applications are invited from registered medical practitioners for appointment of HOUSE PHYSICIAN (Male), vacant 1st December, 1953, for a period of 6 months. Salary £350–£450 p.a., less £100 residential emoluments. Successful applicant will be required to carry out duties at the following Reading Hospitals : Royal Berkshire (403 Beds), Battle (420 Beds), and Prospect Park (104 Beds). The experience to be gained in this appointment is exceptional, as it covers the whole field of clinical medicine, including children's diseases, fevers, pulmonary tuberculosis, and geriatrics.

Apply, stating qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary, Royal Berkshire Hospital, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications invited for the appointment of HOUSE SURGEON to E.N.T. Department, vacant 16th December, 1953. Salary within range £350–£450 p.a., less £100 for board-residence, &c.

Apply, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE SURGEON, vacant 8th December, 1953. F.R.C.S. recognised. Salary £350–£450 p.a. according to experience, less £100 for residential emoluments. The appointment is tenable for 6 months.

Apply, stating age, qualifications with dates, nationality, with copy of 1 recent testimonial, to Secretary.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Area Accident and Orthopædic Department). Duties (which include casualty work) at Royal Berkshire Hospital (403 Beds) and Battle Hospital (343 Beds). Person appointed will work with Registrar and House Officer.

Applications, stating age, nationality, present post, qualifications with dates, together with names of 2 referees, to the Group Secretary, 3, Craven-road, Reading.

REDHILL COUNTY HOSPITAL, Earlswood Common, REDHILL, SURREY. (576 Beds.) REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer). Newly created post, with adequate consultant cover, vacant now ; tenable for 12 months.

Apply to Group Secretary at above address.

RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for vacancies at the following hospitals. Married quarters available for each of the posts.

Caerphilly District Hospital (married quarters available). Pleasantly situated, 6 miles from Teaching Hospital at Cardiff. 144 Beds for acute general surgery, orthopædics, E.N.T., ophthalmology, gynæcology, 26 Beds for general medicine ; busy Outpatient, Casualty, and Pathology Departments ; staffed by full-time and visiting Consultants.

1 SENIOR HOUSE OFFICER (surgery).
2 HOUSE SURGEONS (pre-registration if suitable candidates available).

Tredegar General Hospital. 20 miles from Newport and 24 from Teaching Hospital at Cardiff, 6 miles from the Vale of Usk. Surgical Unit of 50 Beds, with also 6 orthopædic beds, under daily supervision of Consultant Surgeon and visiting supervision of Orthopædic Surgeon. Busy Outpatient and Casualty Departments.

1 SENIOR HOUSE OFFICER (surgery).

Senior House Officer posts tenable 12 months : salary £670, less agreed deduction for full residential emoluments. House Officer posts tenable 6 months; salary £400, less agreed deduction for married quarters and emoluments or £100 p.a. for single residential emoluments.

Apply with full particulars to the Group Secretary, Hospital Management Committee, St. Martin's-road, Caerphilly, near Cardiff.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (91 Beds.) Applications are invited from registered medical practitioners (Male) for the post of RESIDENT HOUSE SURGEON, vacant from 19th December, 1953.

Applications, stating age, nationality, qualifications with dates, and experience, together with copies of 2 recent testimonials or names of 2 referees, should be sent immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN (neurosurgery), vacant from 3rd December, 1953. Resident post, tenable for 6 months. Would be suitable for candidate seeking a higher qualification as it offers excellent experience in neurology.

Applications, stating age, nationality qualifications with dates and experience, together with copies of 2 recent testimonials or names of 2 referees, should be sent immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

RHYL. PRINCE EDWARD WAR MEMORIAL HOS-PITAL. (42 Beds.) CLWYD AND DEESIDE HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER for Orthopædics required immediately for the above Hospital.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, " Rhianfa," Russell-road, Rhyl.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for the D.A.) Applications are invited from suitably qualified practitioners (Male or Female) for the resident appointment of SENIOR HOUSE OFFICER in Anæsthetics. The post offers a wide experience in anæsthesia for general surgery, obstetrics and gynæcology and in the Departments of Urology and Thoracic Surgery.

Applications, giving full details of age, nationality, qualifications, present and previous appointments, with dates, and names of 2 persons to whom reference may be made, should be forwarded to the undersigned at Nether Edge Hospital, Sheffield, 11. W. STANSFIELD, Secretary.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for the Final Fellowship examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the resident whole-time post of REGISTRAR (thoracic surgery). The City General Hospital is a large general hospital with a Thoracic Surgical Unit dealing with tuberculous and non-tuberculous cases and with a Regional Department of Cardiology. The appointment is for 1 year in the first instance and may be renewed for a further year. Possession of a higher qualification would be an advantage and previous surgical experience is desirable.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood road, Sheffield, 10, to arrive not later than 16th November, 1953.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at the Ross Memorial Hospital, Dingwall. The post is resident, and accommodation is available for a married officer. The salary scale of £700–£50–£1000 p.a. Applicants should have previous experience in obstetrics in hospital or general practice.

The schedule of application and further particulars of the post may be obtained from the undersigned, with whom applications should be lodged by Saturday, 21st November, 1953.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD invite applications for a post of SENIOR HOUSE OFFICER under the Joint Training Scheme in Hospital and General Practice, in which the Board and the Executive Council for the County of Inverness are associated. The scheme provides a combined training of 2 years duration for young medical practitioners intending to enter medical practice or a specialty. Concurrent experience in hospital and general practice is given in various departments of the hospitals at Inverness and with selected general practitioners in the town and surrounding district. The post is non-resident and the salary is £670 p.a.

Candidates should apply by Saturday, 21st November, 1953, on forms obtainable from the undersigned, by whom further particulars will be supplied on request.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in General Medicine—main duties in Aberdeen General Hospitals. Candidates should have experience in their specialty and preferably hold an appropriate higher qualification.

Applications, giving 2 names for reference, should be submitted by 28th November, 1953, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :

SENIOR REGISTRAR in E.N.T. Surgery based at Stobhill Hospital, Glasgow.

2 REGISTRARS in E.N.T. Surgery based at Glasgow E.N.T. Hospital.

REGISTRAR in Surgery based at the Western Infirmary, Glasgow.

REGISTRAR in Medicine with duties at hospitals in the Ayrshire Area.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 17th November, 1953.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Medicine, with special experience in cardiology, at the Edinburgh Northern Group of hospitals. The post is superannuable, and the conditions of service are in accordance with the regulations.

Applications, giving particulars of age, qualifications and experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, within 30 days.

SCOTLAND. BOARDS OF MANAGEMENT FOR ANGUS, AND STRACATHRO AND BRECHIN HOSPITALS. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER to the Angus Tuberculosis Hospitals and Clinics, under the control of the Area Chest Physician, with duties at Stracathro, Noranside and Whitehills Hospitals, as required. Clinic, domiciliary and laboratory experience will also be afforded. Salary scale £700–£50 (6)–£1000 p.a. Unmarried accommodation can be provided in Stracathro Hospital, but the Officer appointed may live out, if desired.

Applications, naming 3 referees, should be addressed to the Medical Superintendent, Arbroath Infirmary, Angus, to reach him within a fortnight of the appearance of this notice.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT HOUSE PHYSICIAN for a period of 6 months from 1st January, 1954. Pre-registration post under Medical Act, 1950.

Apply, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (tuberculosis). Salary £700–£50–£1000. The person appointed will gain experience of all forms of tuberculosis and chest clinic work. The main duties will consist of day-to-day care of 48 Beds for male patients at Odstock Hospital.

Applications, together with details of experience, and names of 2 referees, to Group Secretary Odstock Hospital, Salisbury, Wilts.

SIDCUP. KENT. QUEEN MARY'S HOSPITAL. RESIDENT SENIOR HOUSE OFFICER (anæsthetics) required to commence duty 1st December, 1953. Salary £670 p.a., less £150 p.a. for residential emoluments. The post is recognised for the F.F.A.R.C.S.

Applications, stating nationality, age, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary, Sidcup and Swanley Hospital Management Committee.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (E.N.T.) vacant immediately. Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O. R.C.S.

Applications, stating age, qualifications, nationality, and experience, together with copies of recent testimonials, should be sent to J. P. MALLETT, Group Secretary.

Royal Salop Infirmary, Shrewsbury, 24th September, 1953.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade). Post recognised under the conditions of the F.F.A.R.C.S. examination. Vacant immediately.

Applications, stating age, nationality, qualifications and previous experience, together with copies of recent testimonials, should be sent to the Group Secretary, Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of ORTHOPÆDIC/ACCIDENT HOUSE SURGEON (Senior House Officer). The successful applicant will be allowed to attend for 2 days a month at The Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study with the Consultant. The post is recognised under the revised Fellowship regulations in respect of the 6 months training required of candidates for the Final Fellowship examination.

Applications, stating age, qualifications, nationality and experience, accompanied by copy testimonials, should be sent to—

J. P. MALLETT, Group Secretary,
Group 15 Hospital Management Committee.
Royal Salop Infirmary, Shrewsbury, 10th July, 1953.

SKIPTON (near). THE HOSPITAL, Grassington, near SKIPTON. (208 Beds.) MIDDLETON AND GRASSINGTON GROUP. Applications are invited for appointment as HOUSE OFFICER at the above Hospital for tuberculosis. Salary in accordance with national scale (based on experience). £350–£670. Accommodation available.

Applications, stating age, qualifications, and experience, together with names of 2 referees, to be addressed to the Secretary, The Hospital, Middleton, near Ilkley.

SOUTHAMPTON GENERAL HOSPITAL. South West METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from candidates with experience for the post of REGISTRAR (gynæcological and obstetric). Candidates may visit the Hospital if they so desire.

Forms of application, obtainable from the undersigned, should be returned to him by not later than 21st November, 1953. FRANK JENNINGS, Group Secretary,

Southampton Group Hospital Management Committee.
Bullar-street, Southampton.

SOUTHEND-ON-SEA. GENERAL HOSPITAL. Applications are invited for the post of RESIDENT HOUSE PHYSICIAN (House Officer grade), vacant 1st January, 1954. Appointment primarily to Pædiatric Department, with duties in Cardiological and Skin Departments. Post recognised for D.C.H.

Applications, stating age, qualifications, and previous experience, with copies of recent testimonials, should reach the undersigned at the Hospital by 28th November, 1953.

J. C. FIELD, Secretary.

SOUTHEND-ON-SEA. GENERAL HOSPITAL. Required, SENIOR HOUSE OFFICER (surgical), post recognised for F.R.C.S., vacant 1st December, 1953. Salary £670 p.a., less deduction for full residential emoluments.

Applications, stating age, qualifications and experience, and copies of recent testimonials, to reach the undersigned by 11th November, 1953. J. C. FIELD, Secretary.

SOUTHPORT AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. Resident Medical and Surgical vacancies.

SENIOR HOUSE OFFICER. Post vacant November (mainly orthopædic and E.N.T. work).

Temporary SENIOR HOUSE OFFICER. Post vacant now on day-to-day basis. Duties mainly connected with orthopædic and E.N.T. work.

HOUSE PHYSICIAN. Post (not recognised for pre-registration purposes) vacant November.

National Health Service terms and conditions.

Apply, stating age, qualifications, nationality, and experience, together with copies of 2 testimonials, to—

T. CROOK, Group Secretary.
Promenade Hospital, Southport.

STOCKPORT AND BUXTON HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited for the following posts :—

SENIOR HOUSE OFFICER (orthopædics) to the above Group. This post is non-resident.

Stepping Hill Hospital, Stockport (464 Beds)

SENIOR HOUSE OFFICER (Resident Surgical Officer). The post is recognised for the F.R.C.S.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire, forthwith.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Orthopædic Department of Swansea Hospital. The Hospital is recognised for Part II of the Diploma in Physical Medicine.

Applications, stating age, qualifications and experience, should be addressed to— O. C. HOWELLS, Group Secretary,

Glantawe Hospital Management Committee.
Swansea Hospital, St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the posts (2) of RESIDENT ANÆSTHETISTS (Senior House Officer grade). The Hospital is recognised under the D.A. regulations.

Applications, stating age, qualifications and experience, should be addressed to— O. C. HOWELLS, Group Secretary, Glantawe Hospital Management Committee. St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident post of SENIOR HOUSE OFFICER in the E.N.T. Department of the above Hospital. The Hospital is recognised under the regulations of the F.R.C.S. (E.N.T.) and the D.L.O.

Applications, stating age, qualifications and experience, should be forwarded to O. C. HOWELLS, Group Secretary. St. Helen's-road, Swansea.

SWINDON. VICTORIA HOSPITAL. Applications invited for post of RESIDENT SENIOR HOUSE OFFICER (anæsthetics) for the Swindon hospitals. Post is recognised for the D.A. Approved salary, conditions, &c.

Apply Secretary, Swindon and District Hospital Management Committee, 7, Okus-road, Swindon.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in E.N.T. Surgery to fill a vacancy in the approved trainee establishment at the South-East Kent Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 21st November, 1953.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Medicine to fill a vacancy in the approved trainee establishment at the Medway and Gravesend Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 21st November.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Ophthalmology to fill a vacancy in the approved trainee establishment at the Hastings Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 21st November, 1953.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as a Whole-time REGISTRAR in Urology to fill a vacancy in the Canterbury Group of hospitals, for duty mainly at the Kent and Canterbury Hospital, Canterbury, and also at the Royal Sea Bathing Hospital, Margate, in the Isle of Thanet Group of hospitals, where there is work in genito-urinary tuberculosis. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 21st November, 1953.

STAFFORD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics), Male or Female. Recognised for D.A. Post now vacant. Duties mainly at the General Infirmary, Stafford, which is the main and acute general hospital of the Group.

Applications, with copies of 3 testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STOKE-ON-TRENT. BUCKNALL ISOLATION HOSPITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the post of SENIOR HOUSE OFFICER (medical), vacant very shortly.

Applications, with copy testimonials, and full details, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. (Pre-registration post.) Applications are invited for the post of HOUSE OFFICER (gynæcology and obstetrics). Recognised for M.R.C.O.G. (Gynæcology).

Applications, giving full details, together with copy testimonials, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (orthopædics) required, vacant now. Post recognised for F.R.C.S.

Applications, stating age and nationality, together with details of previous service, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for HOUSE OFFICER (general surgery), vacant shortly. Hospital recognised for F.R.C.S. examination and the post is recognised for experience during the pre-registration period.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (pædiatrics) required. Recognised pre-registration post.

Detailed applications, with copy testimonials, should be forwarded to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

ST. ALBANS CITY HOSPITAL, St. Albans, Herts. Locum RESIDENT ANÆSTHETIC REGISTRAR required at the above Hospital for an indefinite period. Post recognised for the D.A.

Applications, stating age, qualifications and experience, together with the names of 2 referees, should be forwarded immediately to the Group Secretary, St. Albans City Hospital, Normandy-road, St. Albans.

ST. ALBANS CITY HOSPITAL. (382 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time RESIDENT ANÆSTHETIC REGISTRAR required at the above Hospital. Post recognised for the D.A. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, the Group Secretary, St. Albans City Hospital, Normandy-road, St. Albans, Herts, by 20th November, 1953.

ST. HELENS. ECCLESTON HALL HOSPITAL. (75 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital. The person appointed will work under the supervision of the Consultant Chest Physician for the Group. There are 75 Beds and the work comprises all types of tuberculosis. Good residential accommodation for a single person, male or female, is available.

Applications to be forwarded to— N. RICHARDS, Secretary, St. Helens and District Hospital Management Committee. Group Office, County Hospital, Whiston, near Prescot.

TORQUAY. TORBAY HOSPITAL. (166 general beds.) RESIDENT HOUSE OFFICER (surgery), Male or Female, required for 8th December, 1953. Post recognised for F.R.C.S. and pre-registration purposes.

Applications, stating qualifications, nationality, and age, with copy testimonials (quoting reference F.955/34), to be sent to the Group Secretary, Torquay District Hospital Management Committee, 62/64, East-street, Newton Abbot, S. Devon.

TUNSTALL. BURSLEM, HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. (96 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for HOUSE OFFICER (medical).

Apply, with copy testimonials and details of previous appointments held, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

VIRGINIA WATER, SURREY. HOLLOWAY SANATORIUM. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time appointment of PSYCHIATRIC REGISTRAR. Resident or non-resident post, but accommodation available only for unmarried applicant.

Application forms obtainable from, and returnable to, the Group Secretary within 14 days of the appearance of this advertisement.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for a vacancy at the above Hospital for a RESIDENT HOUSE SURGEON (Male or Female). Salary will be £350–£450 p.a., less a deduction of £100 for full residential emoluments.

Applications should be sent to— H. L. BOOT, Group Secretary, Warrington and District Hospital Management Committee. c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited from Males or Females for the post of RESIDENT HOUSE PHYSICIAN at the above Hospital. National Health Service terms and conditions.

Apply, giving full particulars, to— H. L. BOOT, Group Secretary, Warrington and District Hospital Management Committee. c/o General Hospital, Warrington, Lancs.

WARWICK HOSPITAL, Lakin-road, Warwick. (265 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). Applications are invited for the appointment of CASUALTY OFFICER (Male or Female), Senior House Officer grade. The post is suitable for one reading for higher qualifications and offers facilities for contact with all Specialist Units in the Hospital.

Applications, together with 2 testimonials, to be sent to the Administrative Officer, Warwick Hospital, Warwick, as soon as possible.

WARWICK HOSPITAL. Applications are invited for the resident post of HOUSE OFFICER in Orthopædics. Work includes attendance at clinics.

Applications, with copies of 2 recent testimonials, to the Administrative Officer, Warwick Hospital, Lakin-road, Warwick.

WARWICKSHIRE. SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). Applications are invited for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at the Warwick Hospital. The post is now vacant.

Applications, giving the names and addresses of 3 referees, should be sent to the undersigned as soon as possible. W. A. JAMES, Group Secretary. 87, Radford-road, Leamington Spa.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. THORACIC UNIT. Applications invited for the following appointments in the Leeds Regional Thoracic Centre (54 Beds) at Pinderfields General Hospital :—

(i) SENIOR HOUSE PHYSICIAN.
(ii) SENIOR HOUSE SURGEON.

Salary for above posts £670 p.a., less a charge of £130 p.a. for board, lodging, &c.

(iii) Locum SENIOR HOUSE OFFICER. Salary £13 per week less a charge of £2 10s. a week for board, lodging, &c.

Address written applications, with full particulars and 2 names and addresses for reference, to—

G. L. BANNER, Group Secretary.
Victoria Chambers, Wood-street, Wakefield.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Senior House Officer grade) £670 p.a The Hospital is recognised for the F.R.C.S. (Eng.), and the post offers excellent experience in general surgery.

Applications should be made to the undersigned immediately.

W. READ, Group Secretary.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. Applications are invited for the post of RESIDENT ORTHOPÆDIC OFFICER (Senior House Officer grade) at the above General Hospital. The person appointed will be required to deputise for the Resident Surgical Officer. Terms and conditions of service in accordance with national recommendations and the post is subject to the National Health Service superannuation acts and regulations thereunder.

Applications should be made to the Group Secretary, at the above address.

WAKEFIELD. THE GENERAL HOSPITAL, Park Lodge-lane WAKEFIELD. (160 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. Applications are invited for the appointment of a SENIOR HOUSE OFFICER in General Surgery at the above Hospital. Terms and conditions of service are in accordance with the National Health Service Act and regulations thereunder.

Applications should be made to the Group Secretary, Clayton Hospital, Wakefield.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in General Surgery to serve the Glantawe Hospital Management Committee. The successful candidate will be based at Morriston Hospital, Morriston, near Swansea. The post is resident and will be subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in General Surgery to serve the Glantawe Hospital Management Committee. The successful candidate will be based at Morriston Hospital, Morriston, near Swansea. The post is non-resident and will be subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in General Medicine to serve the Caernarvon and Anglesey Hospital Management Committee. The successful candidate will be based at the Caernarvon and Anglesey General Hospital, Bangor, and may also be expected to serve other hospitals within the Group. The post is non-resident and will be subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WORKSOP. VICTORIA HOSPITAL. (127 Beds—Recognised for training in General Surgery for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (Male or Female) required at the above Hospital, House Officer grade post, now vacant. Approved pre-registration post.

Applications, stating age and qualifications, together with the names of 2 referees, should be forwarded to the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, as early as possible.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital to commence immediately. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.). Salary will be at the rate of £350, £400, or £450 p.a. according to experience, less £100 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM. WAR MEMORIAL HOSPITAL. (170 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence immediately. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is an approved pre-registration House Officer post. Salary will be at the rate of £350, £400, or £450 p.a. according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM. WAR MEMORIAL HOSPITAL. (170 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) for the Casualty Orthopædic Department of the above Hospital. Appointment is recognised for the Diploma of F.R.C.S. (England and Edinburgh). Salary £700–£50–£1000 p.a., Whitley Council conditions of service.

Applications, giving details of age, qualifications, and previous experience, together with copies of 2 recent testimonials, should be sent to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Wrexham.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE PHYSICIAN required (Male or Female). Post vacant mid-November, 1953, and tenable for 6 months. Approved for Pre-registration Service.

Applications, giving details of age, experience, qualifications, and nationality, together with copies of testimonials, to the Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE SURGEON required (Male or Female). Post vacant mid-November, 1953, and tenable for 6 months. Recognised for F.R.C.S. examination and approved for Pre-registration Service.

Applications, stating age, experience, qualifications and nationality, together with copy testimonials, to Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, immediately.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE GROUP NO. 16 BIRMINGHAM REGION.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)
HOUSE OFFICER (Casualty Department), vacant now.
HOUSE OFFICER (Ear, Throat and Nose Department), vacant now.

New Cross Hospital, Wolverhampton
HOUSE OFFICER (general medicine), vacant now.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.
The Royal Hospital, Wolverhampton.

YORKSHIRE. EAST RIDING HOSPITAL MANAGE-MENT COMMITTEE.

Westwood Hospital, Beverley, Yorks (218 Beds)

(*a*) ORTHOPÆDIC HOUSE SURGEON (Senior House Officer). Recognised for F.R.C.S. Vacant now.

(*b*) HOUSE SURGEON (first, second, or third post), vacant now. Pre-registration post. Recognised for F.R.C.S. General surgical duties, some orthopædics.

Northfield Sanatorium, Driffield, Yorks (78 Beds)

(*c*) SENIOR HOUSE PHYSICIAN. General Sanatorium treatment. Provision may be made available for thoracic surgery, pathological experience, and M.M.R. Unit. Time for studying.

Salary for (*a*) and (*c*) is £670 p.a., less £140 for board and lodging ; and for (*b*) £350–£450 p.a., less £100 for board and lodging. Fully qualified practitioners may also apply for the pre-registration post.

Detailed applications to Secretary, Westwood Hospital, Beverley, Yorkshire.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE.

Grange Hospital, York (Geriatric Hospital of 259 Beds with Consultant staff)

JUNIOR HOSPITAL MEDICAL OFFICER in Geriatrics (resident or non-resident) as soon as possible. Residence available at Doctors' Hostel of modern general hospital in same grounds. Salary £700–£50–£1000, less £153 if resident.

City Hospital, York (Modern General Hospital of 265 Beds with full Consultant staff)

CASUALTY OFFICER (with charge of orthopædic beds), resident or non-resident as from 1st December. Junior Hospital Medical Officer grade. Salary £700–£50–£1000, less £153 if resident. Post recognised for F.R.C.S.

County Hospital, York (Acute Hospital of 269 Beds with full Consultant staff)

CASUALTY OFFICER (with charge of orthopædic beds), resident or non-resident. Junior Hospital Medical Officer grade, as soon as possible. Salary £700–£50–£1000, less £153 if resident. Recognised for F.R.C.S.

SENIOR HOUSE OFFICER in General Surgery (resident). Salary £670, less £153 for residence, as soon as possible. Post recognised for F.R.C.S. and includes gynæcology. Wide experience offered.

Pre-registration HOUSE SURGEON (resident). Salary £350–£400, less £100 for residence, as soon as possible. Post recognised for F.R.C.S. and includes gynæcology. Wide experience offered.

Applications, giving age, nationality, experience, qualifications, and names of 2 referees, immediately to Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointment of HOUSE PHYSICIAN (first, second, or third post), vacant 1st January, 1954. The appointment is for 6 months in the first instance and may be renewed for a further 6 months.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for a whole-time post as REGISTRAR or SENIOR HOUSE OFFICER in Dental Surgery at Hospitals managed by the Belfast Hospital Management Committee. The appointment may be as Senior House Officer or Senior or Principal Registrar, the analogous grades in Great Britain being Senior House Officer, Registrar and Senior Registrar respectively.

Applications should be made on a form, which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, Victory Buildings, 44–46, Queen-street, Belfast, and which must be returned so as to be received not later than 30th November, 1953.

CHANNEL ISLANDS, JERSEY. GENERAL HOSPITAL. Applications are invited for the post of CASUALTY OFFICER which will be vacant on 21st December, 1953, in the above Hospital. The appointment is for 6 months but is renewable for a further 6 months. Salary £400 p.a., less £100 for residential emoluments.

Applications to be submitted not later than 14th November, 1953, to—The President, Public Health Committee.
General Hospital, Jersey, Channel Islands.

NEW JERSEY, U.S.A. ST. ELIZABETH HOSPITAL, ELIZABETH, NEW JERSEY, U.S.A. (250 Beds.) Applications are invited to fill vacancies for 2 INTERNES to serve for 1 or 2 years. Hospital is approved by A.M.A. Interne training being conducted. Salary $100. Passage will be paid.

Applications to Administrator.

NEW YORK. ALBANY HOSPITAL, Albany, New York, U.S.A. PSYCHIATRY RESIDENCIES available in 700-Bed University-teaching, General Hospital with 60-Bed acute treatment Psychiatric Unit fully approved for 3 years training. Experience includes dynamically-oriented psychotherapy with children and adults, shock therapies and neurologic training. Salary range $1620–$2220 annually, plus laundry, uniforms and room.

Address inquiries to Medical Director.

Public Appointments

ROYAL ARMY MEDICAL CORPS. For new conditions and terms of service see page 25.

BOLTON. COUNTY BOROUGH OF BOLTON. Appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Applications are invited for the above appointment from suitably qualified registered medical practitioners (Male or Female). The duties will be mainly in connection with the Maternity and Child Welfare Service and School Health Service, but the person appointed will be expected to carry out such other duties as may from time to time be allotted by the Medical Officer of Health. The possession of a D.P.H., D.C.H. or D.Obst.R.C.O.G. is desirable but not essential. The salary scale for the post is £950–£50–£1300. In fixing the commencing salary consideration will be given to previous experience and to the possession of higher qualifications. The appointment will be superannuable, and the successful candidate will be required to pass a medical examination. The appointment will be terminable by 3 months notice on either side. There are no forms of application, but further particulars may be obtained from the Medical Officer of Health, Civic Centre, Bolton.

Applications, giving full particulars of age, qualifications and experience, and the names and addresses of 3 persons to whom reference may be made, should be forwarded to the undersigned not later than 25th November, 1953.

Town Hall, Bolton. PHILIP S. RENNISON, Town Clerk.

CORNWALL. COUNTY OF CORNWALL. Applications are invited from registered medical practitioners for the whole-time appointment of a SCHOOL MEDICAL OFFICER in the Newquay Area. The salary will be within the scale of £950–£50–£1300. A car is essential and there will be a travelling allowance in accordance with the County scale. Whitley Council service conditions apply.

Applications, stating age, qualifications, and experience, together with a copy of a recent testimonial and the names of 2 persons to whom reference may be made, should be sent to the County Medical Officer, County Hall, Truro, not later than 20th November, 1953.

E. T. VERGER, Clerk of the County Council.
County Hall, Truro, 27th October, 1953.

FLINTSHIRE COUNTY COUNCIL. (Population 145,700.) Applications are invited for the appointment of DEPUTY MEDICAL OFFICER OF HEALTH (Male) from duly qualified and registered medical practitioners holding the Diploma in Public Health or similar qualification. Salary according to Award No. 2321 of the Industrial Court, plus a car allowance. Commencing salary will be fixed according to experience. The officer appointed will be required to devote the whole of his time to the duties of the office, and to act under the direction of the County Medical Officer of Health. The appointment is superannuable and the successful candidate will be required to satisfy a medical examination.

Form of application can be obtained from the undersigned, and should be returned not later than 16th November, 1953.

W. HUGH JONES, Clerk of the County Council.
County Buildings, Mold, 22nd October, 1953.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
SITHNEY ..	CORNWALL ..	21ST NOVEMBER, 1953

HER MAJESTY'S COLONIAL RESEARCH SERVICE. EAST AFRICA TSETSE AND TRYPANOSOMIASIS RESEARCH AND RECLAMATION ORGANIZATION. Applications are invited from Male candidates for the post of MEDICAL RESEARCH OFFICER for research into human trypanosomiasis and epidemiology at the Central Trypanosomiasis Research laboratory. Candidates should possess a medical degree or diploma registrable in the United Kingdom, preferably with postgraduate experience in epidemiology and/or pathology. Initial emoluments, according to experience and qualifications are in the scale £840–£1520 p.a. (i.e., basic salary £565, £600–£50–£750; £800–£50–£1050; £1070–£50–£1270, plus overseas research allowance of £275 p.a. on salaries up to and including £600 p.a. and of £250 p.a. on salaries over £600 p.a.). A cost-of-living allowance is payable at present at the rate of 35% of the sum of salary and overseas research allowance, up to maximum of £350 p.a. Outfit allowance of £60 also payable on first appointment. If government quarters are provided rent is payable at 10% of basic salary. Free passages for Officer, wife, and children under the age of 13. Superannuation is provided under the Colonial Superannuation Scheme.

Application forms are obtainable from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE. 117/88/05).

HER MAJESTY'S COLONIAL SERVICE. Nigeria. Applications are invited from Doctors with medical qualifications registrable in the United Kingdom and with at least 1 years experience after qualification for the following posts in the Medical Department of the Government of Nigeria :—

(*a*) MEDICAL OFFICERS, for general duties in preventive and curative medicine which may include purely rural health work, involving much travelling.

(*b*) MEDICAL OFFICERS OF HEALTH. Duties as under (*a*). In addition the selected Officers would undertake the control of sanitary matters, and may be required to perform the duties of Port Health Officer at a sea or air port. Candidates should possess a Diploma in Public Health. A Diploma in Tropical Hygiene, though not essential, is desirable.

Appointments may be made as follows :—

(*a*) on 3 years probation for permanent and pensionable employment in the Colonial Medical Service, with retiring age of between 45 and 55. Pensions are at the rate of 1/600th of final pensionable emoluments for each completed month of reckonable service ;

(*b*) from the National Health Service. Candidates may resign from the National Health Service but retain their superannuation rights during their time in Nigeria (up to 6 years) and receive a resettlement grant of 20% of the aggregate of their Colonial salary on leaving Nigeria at the end of their engagement ; or

(*c*) on short-term contract (2–4 tours of 18 months duration) with inclusive salary of from £1087 p.a. rising to £2000 p.a. ; on completion of contract a gratuity is paid at the rate of £37 10s. for each completed period of 3 months service (including leave).

Officers appointed under (*a*) or (*c*) are required to contribute to a Widows' and Orphans' Pension Scheme. Salaries, including pensionable expatriation pay for Officers appointed under (*a*) or (*b*) range from £950 to £1850 p.a. Starting salary in all cases depends on experience and war service. Quarters are provided at low rents. Free passages in both directions are provided for Officer and his wife. Payment of the cost actually incurred on 1 outward and 1 homeward passage for each of 2 children under age of 18, subject to maximum of £75 in respect of the return journey for each child, is also granted. Income-tax at local rates. Local leave is permissible and generous home leave is granted after each tour of 18 months duration.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE. 117/14/01).

IPSWICH. COUNTY BOROUGH OF IPSWICH. Applications are invited for the appointment of DEPUTY MEDICAL OFFICER OF HEALTH, DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER AND DEPUTY PORT MEDICAL OFFICER. Salary scale £1233 6s. 8d. by annual increments of £50 to £1483 6s. 8d. Applicants must be duly registered medical practitioners possessing the D.P.H. and preference will be given to those who have had previous experience in relation to the School Health and Mental Health Services.

Application forms and conditions of service will be forwarded on application to the Medical Officer of Health, Elm-street, Ipswich. Applications should be received by me before 25th November, 1953.

Town Hall, Ipswich. J. C. NELSON, Town Clerk.

LINCOLN. CITY AND COUNTY OF THE CITY OF LINCOLN. Applications are invited from registered medical practitioners possessing the necessary qualifications and experience for the appointment of MEDICAL OFFICER OF HEALTH, which includes the duties of School Medical Officer. Salary £1550, rising by £50 annually to a maximum of £1750. A car allowance will be paid. The appointment (which will fall vacant on 1st April, 1954) is pensionable and the successful candidate will be required to pass a medical examination.

Particulars of the appointment and forms of application are obtainable from the undersigned by whom applications must be received not later than 28th November, 1953.

J. HARPER SMITH, Town Clerk.
Town Clerk's Office, Lincoln, October, 1953.

KINGSTON UPON HULL CORPORATION. Health DEPARTMENT. Applications are invited from registered medical practitioners of either sex for the appointment of ASSISTANT MEDICAL OFFICER. Under the Corporation's scheme for the inter-availability of Medical Officers, the post involves duties in the School Health Service, the Maternity and Child Welfare Section, and other Local Health Authority's Services and, in the event of the appointment of a Male officer, duties under the Hull and Goole Port Health Authority. The salary scale is £950 p.a., rising by annual increments of £50 to £1300 p.a., and regard will be paid to previous service in the grade in fixing the commencing salary. The possession of a qualification in Public Health or the D.C.H. will be an advantage, and preference will be given to candidates who are approved by the Ministry of Education for the purpose of ascertainment of educationally subnormal pupils.

Forms of application and schedules of conditions may be obtained from the Medical Officer of Health, Guildhall, Kingston upon Hull, to whom the completed application forms should be returned not later than 20th November, 1953.

MINISTRY OF HEALTH. Dental Officers. The Civil Service Commissioners invite application from Registered Dentists (men or women) for 5 permanent appointments, mostly outside London. Inclusive salary (London) £1408 (age 35)–£1750. Starting salary according to age—e.g., at 32 £1285; 40 or over, £1675. Rather less in the provinces. Prospects of promotion. Candidates must have had not less than 10 years experience in the practice of dentistry, either in private practice or in some branch of Public Dental Service. Principal duty to advise Dental Estimates Board, Executive Councils, and dental practitioners (usually after examination of patient) on matters concerning diagnosis and dental treatment; advice on professional questions and matters having a professional bearing on provision of dental services under National Health Service.

Application forms and particulars from Secretary, Civil Service Commission, Burlington-gardens, London, W.1, quoting No. 4264/53. Application forms to be returned by 3rd December, 1953.

NOTTINGHAMSHIRE COUNTY COUNCIL. Hucknall URBAN DISTRICT COUNCIL. Mixed appointment. Applications are invited from registered medical practitioners for the mixed whole-time appointment of ASSISTANT COUNTY MEDICAL OFFICER AND MEDICAL OFFICER OF HEALTH to the Hucknall Urban District. Applicants must have had at least 3 years professional experience since qualifying, be experienced in the duties of Medical Officer of Health, School Medical Officer and the care of mothers and young children, and possess a Diploma in Public Health. Salaries are in accordance with Awards 2285, 2321 and 2452 of the Industrial Court for Public Health Medical Officers holding mixed appointments, namely:—

(*a*) Assistant County Medical Officer (32/44ths) £875–£39 15s. 6d.–£1034 2s. (on scale £1100–£50–£1300 plus loading in accordance with Spens formula).

(*b*) Medical Officer of Health (12/44ths) £436 7s. 3d.–£13 12s. 9d.–£490 18s. 3d. (on scale £1500–£50–£1700 plus 12/44ths of £100).

Application forms and conditions of appointment are obtainable from my Office and applications should reach me by 20th November, 1953. Canvassing disqualifies.

K. TWEEDALE MEABY, Clerk of the County Council.

Shire Hall, Nottingham.

NEW ZEALAND. Applications are invited from qualified medical practitioners of the British Empire for the position of ASSISTANT TUBERCULOSIS OFFICER in the Department of Health, New Zealand. Special importance will be attached to previous experience as a Specialist in tuberculosis. Salary in accordance with the Hospital Employment Regulations and within the range of £NZ1290 up to £NZ1590 p.a., non-resident.

Conditions of appointment, form of application, &c., obtainable on request (mentioning this paper and quoting reference No. A.3/6/4) from the High Commissioner for New Zealand, 415, Strand, London, W.C.2, with whom completed applications should be lodged not later than Saturday, 5th December, 1953.

NEWFOUNDLAND PROVINCIAL DEPARTMENT OF HEALTH, ST. JOHN'S, NEWFOUNDLAND, CANADA. Medical Officers required:—

(1) ASSISTANT MEDICAL OFFICER, Cottage Hospital. $4000 p.a., plus maintenance in the Hospital. Posts are suitable for single men who have had a couple of years experience since qualification.

(2) MEDICAL OFFICERS rural practices. Suitable for married or single practitioners with 2–3 years experience in general practice. Remuneration approximately $7000 and in some areas appreciably more. In several of these practices unfurnished quarters suitable for married officers are provided and in a number, where a large amount of travelling by sea is involved, diesel cabin cruisers and crew are provided by the Department.

Further information may be obtained on application to the Deputy Minister, Department of Health, St. John's, Newfoundland, Canada. Free transportation to Newfoundland is provided to all successful applicants.

PRISON COMMISSION. Psychiatric Social Workers (Women). Applications are invited for 2 posts in the Prison and Borstal Service at Manchester and Wakefield. Salary £500–£20–£640 p.a. (National Health Service scale of Psychiatric Social Worker in sole charge). Starting pay according to qualifications and experience. Pensionable under the Health Service Superannuation Scheme. Applicants must hold the Mental Health Certificate of either the University of Edinburgh, London or Manchester, and should preferably be experienced in mental work.

Regulations and application forms from Establishment Officer (E.84/3/6) Prison Commission, Horseferry House, Dean Ryle-street, London, S.W.1, to be returned by 17th November, 1953.

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows:—

ENGLAND AND WALES

Wirksworth (Derby).
Lingfield (East Grinstead).
East Hartlepool and West Hartlepool (The Hartlepools).
Catworth, Kimbolton and Spaldwick (Huntingdon).
London, N.1 (London).
Saltash (Plymouth).
Westbury, Yockleton and Halfway House (Shrewsbury).
Dudley (Dudley).
Skegness (Skegness).
Stockport, Hazel Grove, Reddish, and Heaton Mersey (Stockport).

SCOTLAND

Penicuik (Edinburgh).
Ecclefechan, Eaglesfield, Kirtlebridge, and Chapelknowe (Lockerbie).
Bellshill (Motherwell).

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

GOLDERS GREEN. Applications invited for Vacancy. At present conducted by lady doctor. List at present approximately 1900. Residence and surgery available. Apply on E.C. 16A before 14th November, 1953, to—

F. J. ASHFORD, Middlesex Executive Council.
Gloucester House, Gloucester-gate, London, N.W.1.

Hospital Services: Non-Medical Appointments

EPSOM, SURREY. MENTAL HOSPITALS' GROUP LABORATORY. SOUTH WEST METROPOLITAN HOSPITAL REGION. BIOCHEMIST (basic grade), or LABORATORY TECHNICIAN with I.M.L.T. certificate in chemical pathological technique, required at the above Laboratory. Salary (London weighting) and conditions as defined by the National Health Service Whitley Council. The Laboratory provides good opportunities for advanced and special work.

Apply, giving names of 2 referees, to the Group Pathologist, The Mental Hospitals' Group Laboratory, at West Park Hospital, Epsom, Surrey.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

Assistant required for practice (list 3900) in Buckinghamshire. Small 2-bedroomed house provided together with fuel and lighting. Salary £780 p.a.—Please apply to: Dr. ELLIS, 36, Amersham-road, High Wycombe.

Lady, educated, good appearance and address, requires position as Receptionist. Age 26. Some nursing experience. London area only.—Address, No. 869, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Consulting-rooms, full and part time, and Houses in the medical area.—ELGOOD & Co., 1, Bentinck-street, W.1 (WELbeck 8974).

Surbiton, Surrey. For sale, Freehold semi-detached Georgian House of Character, main road, 5 minutes station. Redecorated throughout. Spacious hall, sun verandah, cloaks—w/c. 2 lofty reception rooms, modern kitchen, 5 bedrooms, bathroom, separate w/c. Plans prepared and licence sanctioned for conversion of spacious basement to Clinic with separate entrance. Secluded garden garage. Price £5800. Mortgage available.—Further particulars, write: Address, No. 868, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service.—Send specimen of urine and £1 1s. fee to: WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (Telephone: MUSeum 5386–7).

Austin A30, A40 and A70 range, and all Show Models. A limited number of orders now acceptable from proven essential users for delivery ahead.—Brochures from Austin House, 140/144, Golders Green-road, N.W.11.

New Ford Popular and all Show Models.—Limited number of orders now acceptable from proven medical essential users.—Application forms, brochures, easy terms from: Ford Division, H. A. SAUNDERS LIMITED, 140/144, Golders Green-road, London, N.W.11.

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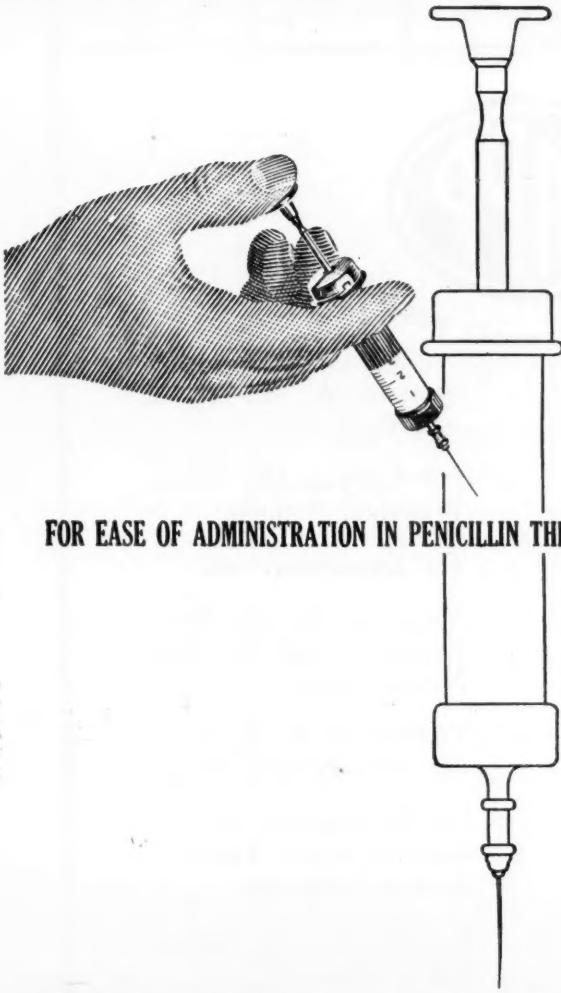

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